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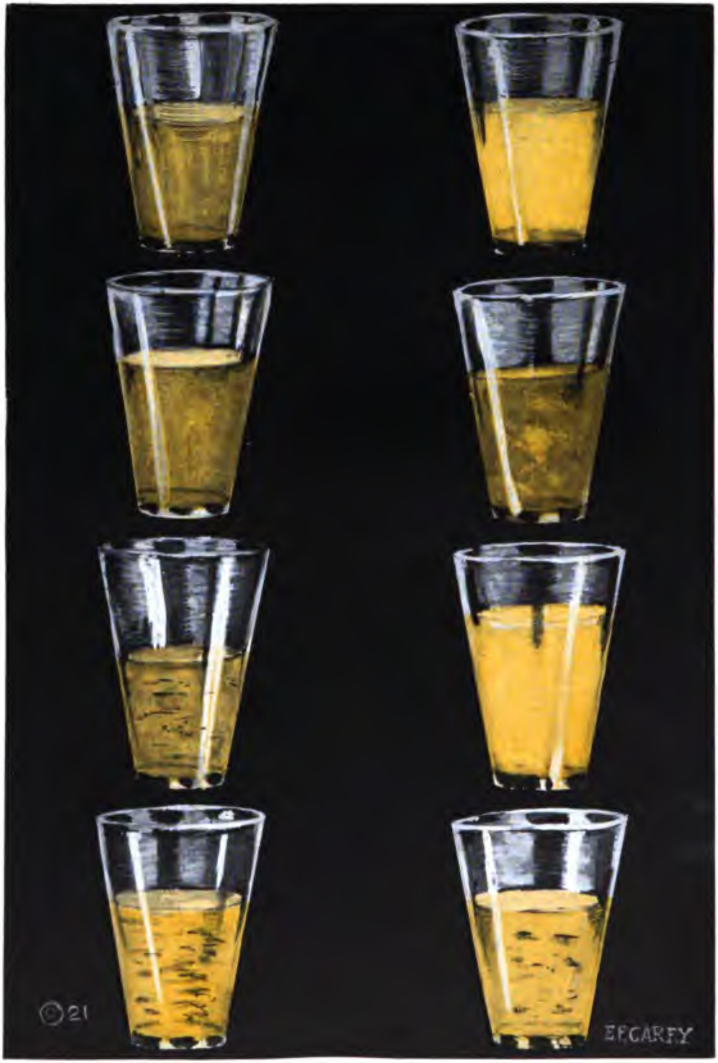

THE TWO GLASS TEST.

Reading from left to right:
Upper row—1st. Turbid. 2nd. Clear. Acute anterior urethritis.
Second row—1st. Turbid. 2nd. Turbid. Acute posterior urethritis.
Third row—1st. Cloudy with few shreds. 2nd. Clear. Chronic anterior urethritis.
Lower row—1st. Slightly cloudy with shreds. 2nd. Slightly cloudy with shreds. hronic antero-posterior urethritis.

8223

Gonorrhea and Impotency

Modern Treatment

By

Edwin W. Hirsch, S. B. M. D.

American Electrotherapeutic Association, American Medical
Association, 1st Lieut. M. C., U. S. Army

With an Additional Lecture on Ultra-Violet Radiation
BY A. J. PACINI, M. D.

Colored illustration from life. Schemio-diagrammatic drawings
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EUGENE F. CAREY, M. D.

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PREFACE

The average doctor after graduating goes forth from medical college with hazy and indefinite ideas of the most important of human affections, venereal diseases. The reason is, that it is almost impossible for a student to read text-book descriptions, as they are often too long and wordy. Besides, they do not tell exactly what to do and how to do it. To be of value the present text-books would have to be rearranged and simplified. A few solid, practical ideas that have been found successful in practice are far better than a mass of theoretical lore. It is not to be inferred that the text-book is to be discarded, but I do maintain that it is necessary to be able to tell the story of how to cure a case of gonorrhea in such manner that it will be readily understood by the general practitioner. The solution of the venereal disease problem lays in prevention and immediate attention if infection takes place. Herein has been formulated a plan of treatment that, if followed, will lead to success in the management of gonorrhea and its sequelae. Although this is the age of specialization the general practitioner still bears the brunt of the responsibility in relieving the maladies of the human race. The general practitioner must be told the story of venereal diseases in an honest, understandable manner. Too often the practitioner has been exploited by those who claim they have found the successful drug for gonorrhea. He tries one. If it fails he tries another, and so on *ad infinitum,* hoping that some day such a drug may be discovered. The necessary drugs are at our own doorsteps only we must know how to use them. The remedies herein advocated are for the most part pharmacopeial preparations that have been found to be the most efficacious and best for patient and purse. Despite the innovation of new drugs for chronic gonorrhea silver nitrate is still with us.

In presenting this book the author offers no short cut to the successful treatment of gonorrhea. All of life is a physico-chemical phenomena and disease also is a physical as well as chemical derangement. Physical modalities in the treatment of gonrrhea have been little used because they have not been thoroughly understood. Heat is essential to life and is one of the most potent agencies that we possess today. Heat brings fresh blood to a part; heat raises the general efficacy of the entire organism by hastening the elimination of waste and by stimulation of the protective substances within the cells. The value of heat applied externally is well known to every mother and every general practitioner. To apply that heat to structures beneath the surface has been the aim of scientists. In diathermy we have an agent that will heat any part of the body, no matter how great the distance from the surface, to any temperature we desire. The more diathermy is used the more you realize that it is one of the best means we have to relieve inflammation. The use of diathermy in affections of the prostate, bladder and testicles is fully explained in the text. The value of ultra violet light which has been preached by some men for years is now, at last, being employed. Light when correctly used is one of the most valuable adjuvant in the treatment of gonorrhea and its after effects. The value of light in impotency has been appreciated by some workers and once it is used, you will never be without it. Particularly in the treatment of chronic cases of gonorrhea which require the expenditure of skill, patience and tact, we will be greatly aided by the physical agencies previously mentioned. Chronic gonorrhea is the nightmare of most physicians and a large number of specialists. The general practitioner who has a patient suffering from chronic gonorrhea, who has been the rounds should be able to say to him: "I have the knowledge and means of treating you successfully if you follow my instructions and give me your time." He is then relieving one of the most disastrous affections of the race. Nature intended that gonorrhea should be cured and it can be cured. It can be cured quite painlessly although the old school believed pain was essential to the cure. I believe the less injury to the part the better the chances of recovery for the patient. Thanks to the physical elements we now have, this is rendered possible.

Physicians are forever seeking a treatise on the successful treatment of gonorrhea and I feel that herein is presented the best treatment known to date. However, it must be stated that in order to obtain satisfactory results, time is necessary. Patients usually remain in the doctor's office but a short time. Good results cannot be obtained by slipshod methods nor by the "Mill System." When physiotherapy is used in connection with the treatment of gonorrhea we must be prepared to give each patient the necessary amount of time. By so doing, we will do much to aid in the quick recovery from this disease.

To My Friend

L. B. P.

This Volume

Is

Respectfully Dedicated

LECTURE I

ANATOMY

The Uro-Genital Tract

External Uro-Genitalia

Penis.

Scrotum { Testes
Portion of the spermatic cord.

Internal Uro-Genitalia

Urinary Bladder.

Urethra.

Seminal Vesicles.

Prostate.

Penis

Length. 10 to 13 cm. (average) measured from pubis to tip of glans.

Glans. The anterior portion or head.

Prepuce. The loose skin covering the glans. It is a continuation of the skin covering the body of the penis.

Frenum. A cord-like fold that attaches the prepuce to the under surface of the glans.

Meatus Urinarius. The opening at the anterior portion of the glans, which is the end of the urethra. The approximating surfaces are spoken of as lips and are 6 to 8 mm. long.

Corona Glandis. The elevated edge of the glans next to the body.

Bulb. Posterior portion of the corpus spongiosum.

Coronal Sulcus. The depression back of the corona.

Corpus Spongiosum. The erectile tissue that surrounds the urethra. It begins posteriorly at the bulb and ends anteriorly at the coronal sulcus.

Corpus Cavernosum. Two cylinders of erectile tissue that form the body of the penis. Begin at the ligament of the symphysis and terminate at the coronal sulcus.

Urethra. A canal that extends from the urinary bladder to the meatus.

Dorsal Vein. The main vein of the penis. It is on the dorsal surface. It ends in the prostatic (pudenal) plexus of veins.

Dorsal Artery. The main artery of the penis and formed by the terminal twigs of the internal pudenal vessels.

Dorsal Nerve. The branches of the pudenal.

Scrotum.

The cutaneous sac that contains the testes and portion of the spermatic cord.

Median Raphe. A ridge in the mid-line of the scrotum.

Funiculus Spermaticus (Spermatic cord). A cord-like structure consisting of a duct, blood vessels, lymph vessels and nerves, and extends from the internal abdominal ring to the posterior part of the testis.

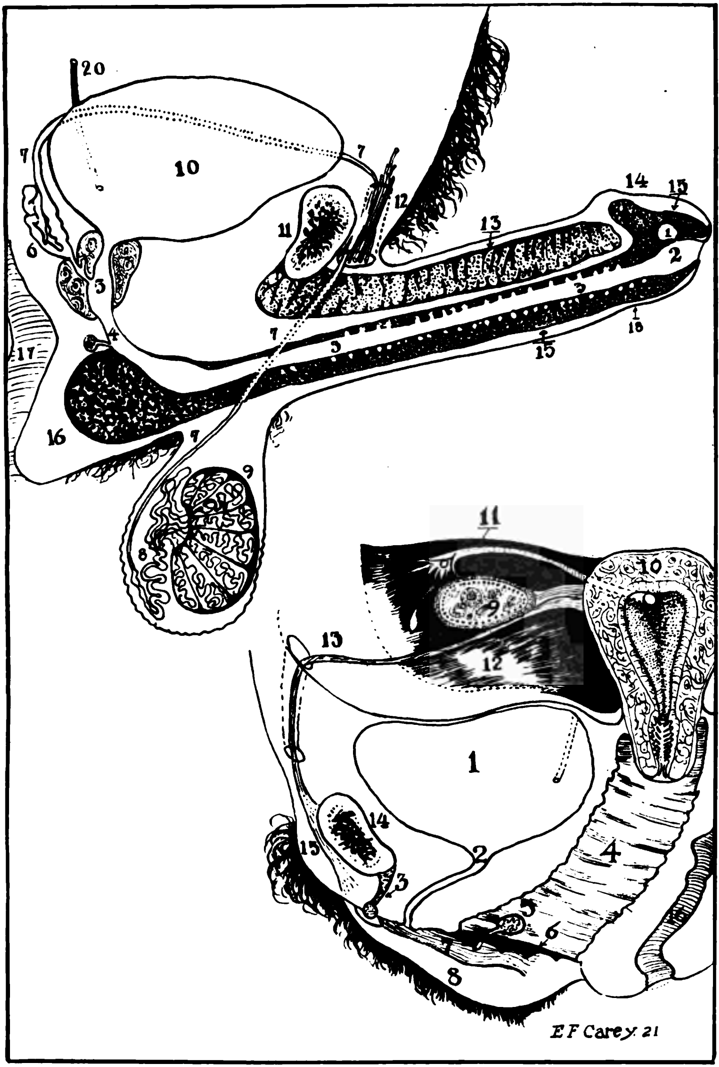
Contents of Cord

Ductus Deferens (vas deferens). Conveys spermatozoa from the testes to the seminal vesicles.

Arteries.

Internal Spermatic. Arises from the abdominal aorta.

External Spermatic. A branch from the inferior epigastric.



SCHEMATIC DRAWING OF MALE AND FEMALE REPRODUCTIVE ORGANS. SEE PAGE 16 FOR KEY.

SCHEMATIC DRAWING OF MALE AND FEMALE REPRODUCTIVE ORGANS

MALE REPRODUCTIVE ORGANS

1. Lacuna Magnum.
2. Fossa Navicularis.
3. Urethra. (Spongy portion.)
4. Urethra. (Membraneous portion and M. Triangularis or Cut-off muscle and Cowpers gland.)
5. Urethra. (Prostatic portion surrounded by Prostate.
6. Seminal vesicles with Ejaculatory duct through Prostate.
7. Vas deferens from Seminal vesicles to Epididymus.
8. Epididymus.
9. Testicle.
10. Bladder.
11. Os pubis.
12. Inguinal canal.
13. Cavernous portion of Penis.
14. Glans penis.
15. Spongy portion of Penis.
16. Bulbous spongy portion of Penis.
17. Rectum.
18. Location of Tyson's glands at Frenum.

Note: Crypts of Morgagni on roof and Glands of Littre along Floor of Urethra (3).

20. Ureter entering bladder.

FEMALE REPRODUCTIVE ORGANS

1. Bladder Urinarius.
2. Urethra.
3. Clitoris.
4. Vagina. Note Folds laterally, and Rugae anteriorly and posteriorly.
5. Barthelonian Glands.
6. Hymen.
7. Labia Minor.
8. Labia Major.
9. Ovary showing histological construction.
10. Uterus. (Lateral longitudinal section showing entrance of tube and histological construction. Note Plicae palmatae at entrance to Cervix.
11. Fallopian tube showing fimbriated end with Ostium abdomnale the only instance in the Body where Mucous and Serous membranes meet.
12. Broad ligament represented by black portion.
13. Round ligament showing course from Uterus through inguinal canal to termination at Os pubis.
14. Os pubis.
15. Mons veneris.
16. Rectum.

Artery to the ductus deferens. A branch from the superior vesicle.

Veins.

Pampiniform Plexus. Small sized veins which empty into the spermatic vein. On the right side the spermatic vein empties into the inferior vena cava; on the left side into the left renal vein.

Lymph Vessels.

Empty into the lumbar lymph nodes.

Nerves.

External Spermatic. A branch of the genito-femoral.

Sympathetic Twigs. Arise from the renal and aortic plexuses.

Testis (Testicle)

An olive shaped body wherein the spermatozoa are formed.

Dartos. Involuntary muscle fibers beneath the skin of the scrotum.

Fascias of the scrotum.

External spermatic or intercolumnar fascia. Derived from the aponeurosis of the external oblique muscle.

Cremasteric Fascia. Derived from the fascia of the internal oblique muscle.

Infundibulaform Fascia. Derived from the fascia transversalis.

Tunica Vaginalis. A serous sac that envelopes the testicle.

Tunica Albuginea. A tough fibrous coat that is firmly attached to the testis and forms their wall.

Lobule of Testis. The portion containing the seminiferous tubules.

Septum of Testis. The fibrous partitions which divide the testis into compartments.

Mediastinum Testis. That portion through which the vessels pass to and from the testis.

Epididymis

A structure that rests on and is attached to the testis and serves to further develop and convey the spermatozoa to the ductus deferens.

Caput Epididymis (Globus Major). The head of the epididymis or portion next to the testis.

Corpus Epididymis. The body of the epididymis.

Cauda Epididymis (Globus minor). The inferior portion that terminates in the ductus deferens.

Ductuli Efferentes Testis. Fifteen to twenty ducts which connect the caput epididymis with the lobule of the testis.

Rete Testis. A fine network of straight seminal canals which enter the testis.

Tubuli Seminiferi Recti. Straight seminal canals formed from the tortuous canals.

Tubuli Seminiferi Contorti. Tortuous seminal canals.

Urethra

A membranous canal leading from the urinary bladder to the eternal meatus and through which urine, secretions from the seminal vesicles, prostate gland and Cowper's glands are emitted. It is divided into two parts: anterior and posterior urethra.

Anterior Urethra. Extending from the anterior surface of the triangular ligament (cut-off muscle) to the eternal meatus. This portion varies. Average's from five to six inches long.

Fossa Navicularis. A widening of the urethra within the glans.

Posterior Urethra. Extends from the anterior surface of the triangular ligament to the urinary bladder. It consists of a membranous and prostatic portion.

Membranous Urethra. That portion of the urethra contained within the triangular ligament. Its length is threequarters of an inch. It is the only portion of the urethra that is immobile.

Prostatic Urethra. That portion of the urethra contained within the prostate gland. It begins at the neck of the urinary bladder and the average length is two and one-half inches.

Glands of Littre. Small mucous glands in the wall of the urethra.

Crypts of Morgagni. Pockets formed from the infolding of the mucous membrane of the urethra and are located in anterior urethra.

Verumontanum (Colliculus seminalis). A prominent elevation in the prostatic urethra.

Sinus Pocularis (Utriculus Prostaticus). A small depression in the verumontanum.

Ejaculatory Ducts. Two small ducts that carry the secretion of the spermatic vesicles into the urethra. The ducts empty into the margin of the sinus pocularis.

Cowper's Glands (Bulbo-Urethral). Two glands, the size of a pea situated in the urogenital trigone.

Ductus Excretorius. The ducts of Cowper's glands which penetrate the anterior band of the triangular ligament.

Lacuna Magnum. Two large crypts of Morgagni located just inside the meatus urinarius.

Prostata (Prostate)

A solid glandular body about the size of a horse chestnut, which surrounds the neck of the urinary bladder and lies on the anterior aspect of the rectum. It can be palpated by inserting the finger in the rectum about one and one-half inches.

Sheath. A firm covering which is derived from the pelvic fascia.

Pudenal Plexus. A plexus of many thin-walled veins which lies within the sheath.

Capsule. A thick, fibrous shell immediately surrounding the prostate though not firmly connected with the sheath.

Lobes. There are two lobes, the right and left, which are separated from each other by a median groove that can be felt per rectum. The median lobe forms when the prostate hypertrophies.

LECTURE II

EQUIPMENT

The equipment listed herein does not contain a large number of instruments, for the best artisan works with few but good tools. The average list as given in most text-books is long and includes many obsolete instruments and those favored by particular writers. Many of these are not necessary in treatment and a large display in the doctor's office has a bad effect on some patients and scares many more of them away,—more than we are inclined to believe. It is surprising to see how really few instruments are necessary. Metallic sounds were used quite indiscriminately in the past and at the present are sometimes used without any real necessity for so doing. Patients have suffered at the hands of physicians, who are too ready to pass a sound, or who do not know how to pass it correctly. Patients soon become wary of the physician who displays a large number of metallic implements and prefer to keep their gonorrhea rather than receive brutal treatment.

In the selection of instruments of any kind we emphatically advise the purchase of the best. Altho the initial expenditure will be but little more, after years of use they will be as good as new. The best is always the cheapest. For convenience in listing, we will head the instruments as metallic and non-metallic. The metallic instruments will consist of one set of Van Buren sounds of the conical tip type in the following sizes: 15, 17, 19, 21, 23, 25, 27, 29, 31 and 33. (French Scale). One in the French Scale is ⅓ millimeter, thus a size 30 would be 10 millimeters in diameter. One set of Benique sounds; sizes 23, 25, 27, 29 F. One Psychrophor. One Swinburne Urethroscope size 24. The non-metallic instruments will consist of 1 Guyon syringe (drachm 2 size) with Guyon catheter. There should be three additional catheters; large, medium and small. Three hard silk and linen catheters, straight and elbowed, large, medium and small. Bulbous bougies silk and linen (Gaillard) sizes 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29 F. Six various shaped whalebone filaforms. One Urological Table. (Although a large number of metal tables are used, an ordinary wooden table 6 x 2 feet is usually satisfactory. It has the advantage that no precautions are necessary when diathermy treatment is employed. It can be made very inexpensively by any carpenter.) Three pairs of rubber gloves. Three Luer syringes, one, two and ten cc capacity. The Luer syringes can also be used as Guyon syringes by obtaining a Guyon adapter which is a small metallic point which fits the catheters; it also fits any Luer syringe. Many times it is difficult to obtain a Guyon syringe and the adapter used in connection with the Luer serves the purpose well. One drachm 2 glass syringe. One white enamel basin. Two oblong enameled trays sizes 4 x 10 and 4 x 18″. Six medicine glasses of one ounce capacity. Two drinking glasses of six ounce capacity for collecting specimens of the urine. One pair special Bierhoff leg holders with screw clamps.

Special Instruments and Apparatus

One Swinburne Urethroscope size 24 for posterior examination and one Squier's Urethroscope size 24 for the ante-

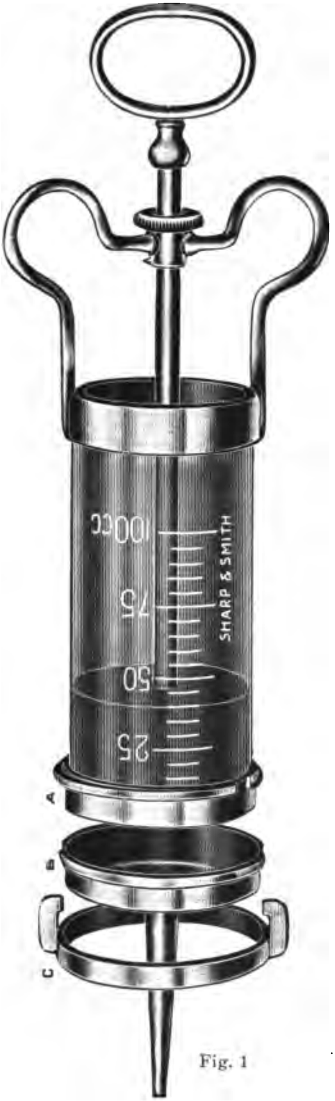


Fig. 1

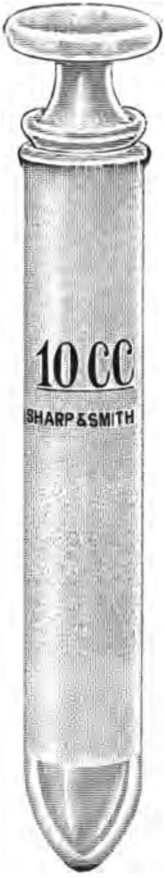


Fig. 2

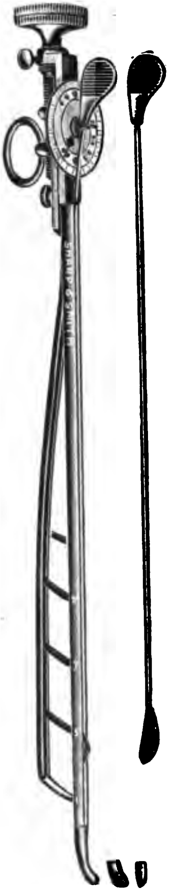


Fig. 3

Fig. 1. Large syringe for irrigating purposes.
Fig. 2. Urethral syringe. (Note: Patient is instructed to fill syringe half full.)
Fig. 3. Urethrotome, Otis.

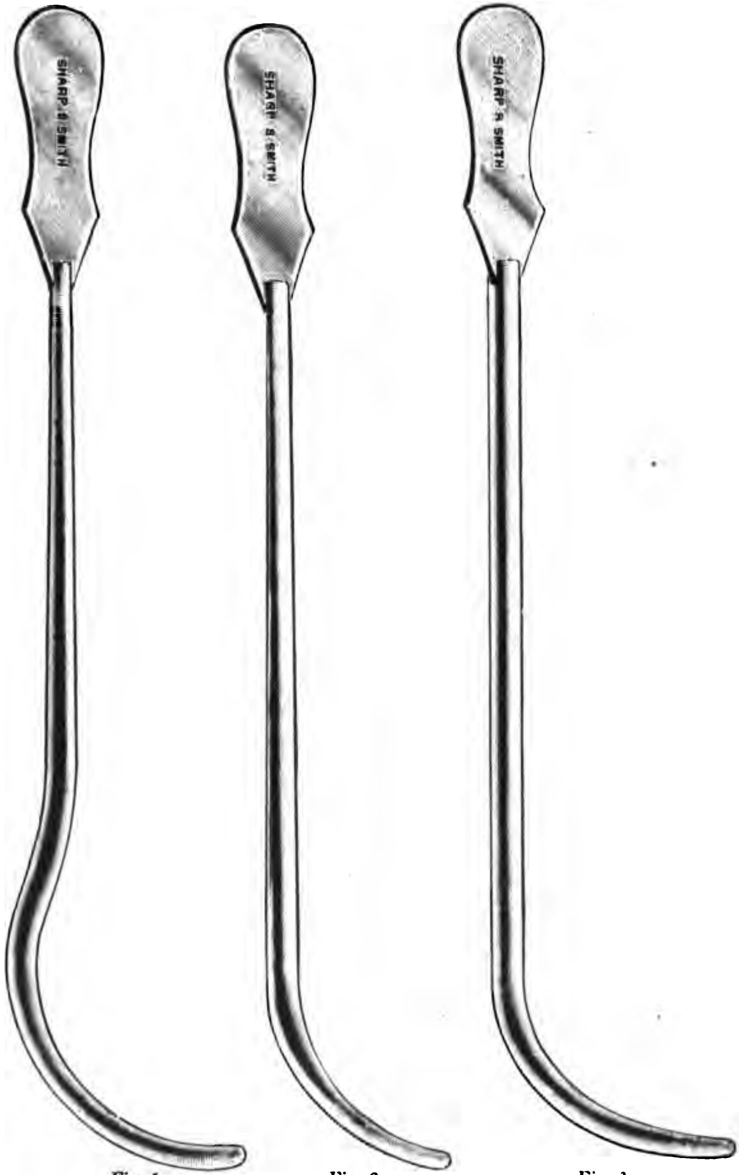
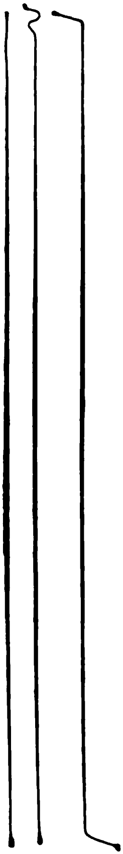


Fig. 1 Fig. 2 Fig. 3

Fig. 1. Urethral sound, Guyon-Benique curve used in prostatitis.
Fig. 2. VanBuren sound, round tip for diagnosis.
Fig. 3. VanBuren sound, conical tip for dilatation.



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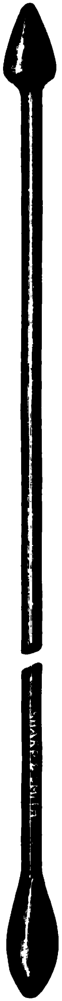

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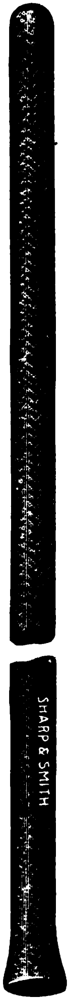

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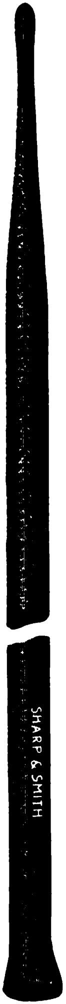

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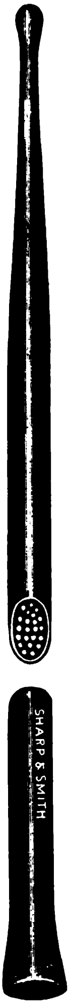

Fig. 5

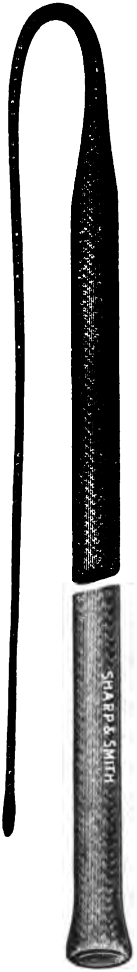

Fig. 6

Fig. 1. Filiform bougies.
Fig. 2. Guyon's acorn bougie.
Fig. 3. Urethral bougie, cylindrical, Eynard.
Fig. 4. Urethral bougie, olivary, Eynard.
Fig. 5. Urethral bougie, loaded.
Fig. 6. Urethral bougie, whip shape.

rior urethra. One diathermy apparatus. One water-cooled ultra violet lamp. One air-cooled ultra violet lamp. One galvanic outfit. One large incandescent lamp. One small incandescent lamp.

Solutions

Silver Nitrate in 1/10%, ¼%, ½%, 3% and 10%. These should be kept in dark bottles. One hundred 1 grain potassium permanganate tablets. One bottle of silvol capsules. One bottle of mercurochrome tablets. A one ounce bottle of 95% carbolic. A four ounce bottle of alcohol. A four ounce bottle of lysol. A one ounce bottle of balsam of Peru. One tube of K. Y. lubricating jelly. One tube of novocaine tablets.

It will be noted that there is no irrigator but the large four ounce syringe is advised. As a general rule irrigations have done much harm, as they serve to induce complications and prolong the disease. A cut of each of the necessary instruments has been illustrated in the text because it is essential when a physician orders a syringe for the patient that he choose the type he wants by illustration. If the syringe is at all difficult to get, the physician should keep a small quantity on hand and supply one to the patient if necessary.

In genito-urinary work it is best as a rule to work with rubber gloves. Some operators prefer to work with their bare hands, taking care, however, to wash them immediately after use. Although there are a host of substances that are used as disinfectants, there is nothing that excels soap and water. Tar soap is excellent for this purpose, for it lathers readily and is not expensive.

Cleansing of Instruments

Steel sounds may be cleaned by immersing them in boiling water that contains a pinch of bicarbonate of soda. A quick and useful procedure is to immerse the instruments in a 10% lysol solution for five minutes and then wash thoroughly with water. After using a sound it should be held under a running stream of water to wash off any material placed in the lysol. Do not put metallic instruments in potassium permanganate or any bichloride-mercury solutions. If metal instruments are left in these solutions, a metallic salt is deposited on them that is difficult to remove. Metal instruments may be left in biniodide-mercury solutions without harm.

Catheters

Ordinary soft rubber catheters should be immersed in boiling water five minutes after using and then washed with soap and water and suspended so that water remaining within them will run out. They can then be wrapped up and put away. Metal catheters can be handled in the same way. Woven catheters should be cleansed in a 1% lysol solution followed by water and then suspended in a tall jar on the bottom of which is a piece of gauze sprinkled with a few drops of a 40% formalin solution. The catheters are allowed to remain for twenty-four hours and then transferred to the sterile receptacle.

Glass syringes are rendered sterile by boiling for 5 minutes in water, care being taken to remove the plunger before boiling. This prevents cracking of the syringe.

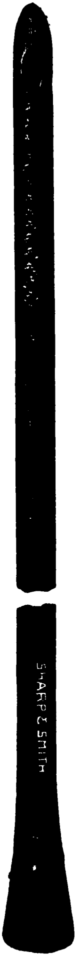

Fig. 1

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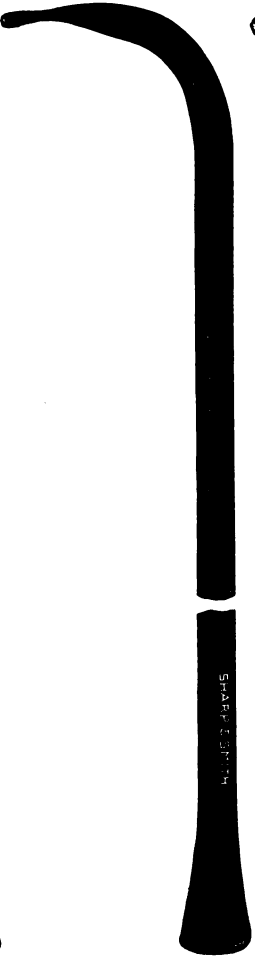


Fig. 3

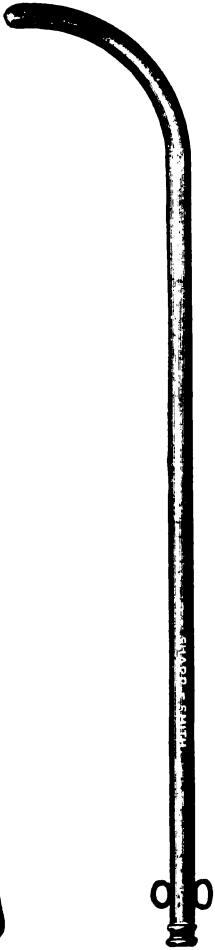


Fig. 4

Fig. 1. Catheter, cylindrical, Eynard.
Fig. 2. Catheter, Mercier Coudé, Eynard.
Fig. 3. Catheter with olivary point.
Fig. 4. Metal catheter, male.

Formula for Making K. Y. Lubricating Jelly

If large amounts of lubricating jelly are to be used, we suggest the following formula.

Tragacanth	30 gm.
Glycerine	50 cc.
Distilled Water	600 cc.
Mercury Oxycyanide	1½ gm.

It will be best to purchase this in tubes for ordinary use. K. Y. Lubricating Jelly is far superior to glycerine or any other similar substance in that the passage of instruments into the urethra or rectum is made almost a painless procedure.

LECTURE III

GONORRHEA

Gonorrhea of the Male Urethra

Definition. An inflammation of the male urethra due to the gonococcus.

Synonyms. Gonorrhea is known to the public under the name of "Clap" and a "dose." The scientific terms other than gonorrhea, but referring to the same condition are specific urethritis and blenorrhea. The term clap is derived from the section of Paris where those afflicted with gonorrhea were once quartered. This section was called the Clapier.

Etiology. The predisposing conditions in the female that favor the spread of gonorrhea are, 1st, Leukorrhea, 2nd Menstruation, 3rd Lack of cleanliness, 4th Pregnancy. The chances of contracting gonorrhea are greatly increased by union before, during and immediately after menstruation. The increase of blood seems to activate latent gonococci, for constantly cases are coming up where men have lived with women for long spaces of time without contracting any disease until they indulge in intramenstrual coitus and soon come down with a genuine case of gonorrhea. Menstruation also seems to bring out gonococci buried deep within the crypts and these organisms are brought to the surface during menstruation.

The predisposing conditions on the part of the male are 1st, Lack of cleanliness; 2nd, Long adherent or tight foreskin; 3rd, Excessive indulgence, excitement and ingestion of alcohol.

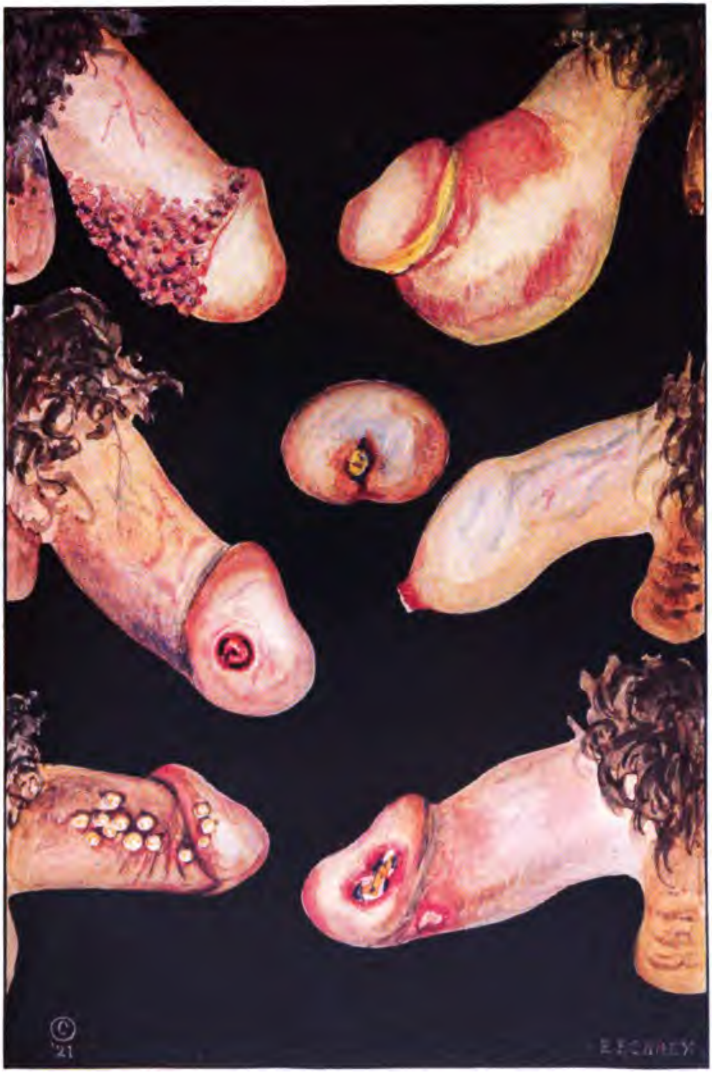
The man who does not keep his genitalia clean, lowers his resistence to gonorrhea. The collection of secretion beneath the prepuce is an excellent feeding ground or hiding place for any organism, more especially the gonococcus. A long, tight foreskin predisposes, in that it is difficult to remove pus that has found its way inside. Tight foreskins also serve to macerate the delicate tissue beneath it and so lowers its resistance. Several unions in a night, especially those associated with extreme excitement and roughness are factors in undermining resistance. Alcohol bears a good part of the blame, not only in that it serves to lessen the mental control, but, also acts on the tissues of the genital tract and makes them more susceptible.

Dirty instruments may, and have in some cases induced gonorrhea in innocent people or have superinduced a gonorrheal urethritis where previously a simple or non-gonorrheal urethritis had existed. Contaminated toilets may also serve as a vehicle but the number of infections from this source is few, and the poor toilet is blamed for most cases when it is perfectly innocent. Gonorrhea is contracted by direct contact and if users of public toilets would see that no pus is on the seat prior to using it, and also take care that the penis would not touch the walls of the vault, the chances of contracting gonorrhea in this manner would be eliminated. Wipe off the seat with toilet paper before using the toilet. Contaminated towels may cause gonorrheal opthalmia, but the incidence of this affection is greatly reduced with the introduction of sanitary paper towels or individual linen towels.

The exciting or real cause of gonorrhea is due to the gonococcus of Neisser discovered in 1879. The organisms are usually coffee bean shape and occur in pairs. The gonococci are usually located within the pus cells but may be extra cellular, that is, outside of the walls of the leucocytes. The organisms are gram negative. The shapes of the gonococci vary and often in the latter stages of the disease or in chronic cases they become rounded in form. Because of their occurrence in pairs the organisms are also referred to as the dipiococcus of Neisser.

Technic for Demonstrating the Gonococci. By means of a small round wooden applicator, which is whittled to a point and covered with a thin film of cotton by a twisting motion, some of the secretion is caught up on the tip of the applicator and smeared over two glass sides. Draw the applicator over the slide but once, thus making a thin film. Some workers use a platinum wire with a loop to catch up secretion but this has many disadvantages. A glass slide may also be used by applying it directly to the meatus but this method makes thick, sloppy smears, which are hard to view under the microscope.

If there is no discharge present and gonorrhea is suspected or we desire to inform ourselves if a gonorrhea is still present, secretion may be obtained by milking the urethra. To correctly milk the urethra have the patient grasp his penis gently at the peno-scrotal junction, with the thumb and forefingers of both hands. Have him strip the penis by drawing his fingers upward with gentle pressure.



COMMON LESIONS OF PENIS
Reading from left to right:
Upper—Venereal warts. Paraphimosis.
Middle section—Chancre. Gonorrheal pus. Phimosis.
Lower section—Herpes progenitalis. Chancroid.

Method of Staining. Fix the glass slides by running them through the flame of an alcohol lamp two or three times. Save one slide for the gram stain. Use the other for the methylene blue stain. Cover the slide with methylene blue for thirty seconds. Wash the slide in water. Dry the slide by putting it under a sheet of smooth blotting paper and apply firm but gentle pressure. Apply a drop of immersion oil to the slide. Examine under the oil immersion lens. If many pus cells are seen and coffee bean shape diplococci occur within them, the diagnosis is gonorrhea.

The methylene blue stain is adapted for quick work when you wish to find out what the secretion looks like and the number and character of the organisms present. To make a diagnosis, however, in all cases do a gram stain.

Technic for Making a Gram Stain. Cover the slide with carbo-gentian violet for two minutes.

Pour off stain and cover with Gram's iodine stain for 1 minute.

Pour off stain and discolorize with 95% ethyl alcohol by dropping the alcohol on the slide tilted at an angle until it is seen that no more of the purple color comes away.

Counterstain with carbo-fuchsin for 15 seconds.

Wash in water.

Blot and dry.

Examine under the oil immersion lens.

The gonococci appear a pale red to pink. The organisms that stain red are called gram negative. The gram positive organisms stain blue.

Though the Gram stain is sufficient for all ordinary purposes, to confirm a diagnosis it is best never to be too positive in your statements when your opinion may be used in a medico-legal manner. This is particularly true in cases where divorce is wanted. In such cases the work should be done by a recognized laboratory and cultures should also be taken. For the usual line of work, however, cultures are unnecessary, for the presence of the gonococcus can be more readily and more satisfactorily determined by methods already described.

Preparation of Stains. Loeffler's Methylene Blue. Saturated solution methylene blue in alcohol 30 cc; solution potassium hydroxide in distilled water (1 to 10,000), 100 cc.

Carbo-Gentian Violet. Gentian Violet, 1 gramme; Absolute Alcohol, 10 cc. Dissolve above and after 24 hours add 100 cc of a one per cent solution of carbolic acid.

Anilin-Gentian-Violet. Anilin oil water, 75 cc; saturated solution gentian violet in alcohol, 25 cc. Anilin oil water is made by adding two cc anilin to 98 cc distilled water and shake violently. Filter through filter paper several times.

Pathology of Acute Anterior Urethritis. The incubation period of gonorrhea is usually four days for the initial case, but may be as short as one day or prolonged to seven days. On subsequent infections the incubation period is shortened, the average time being two to three days.

The gonococci are usually deposited in the fossa mavicularis and rapidly multiply themselves. Leucocytes hasten to the area in the attempt to limit the infection and to ingest the gonococci. The blood capillaries dilate and serum exudes from them. Pus is formed at the site of the inflamed area and is thrown off. The gonorrheal pus or discharge consists of gonococci, serum, leucocytes and desquamated cells.

The inflammation spreads up the urethra by direct extension and by the lymph vessels involving the small glands of Littre and crypts of Morgagni. The gonococci often bury themselves deeply within these glands and it is often with great difficulty that they are gotten out. The surface of the urethra is eroded.

Symptoms. Redness and edema of the meatus is one of the first symptoms. If the case is a severe one, the lips of the meatus pout and a drop of pus may be seen exuding. The discharge is thin and mucoid at first. becoming creamy and heavy as the case advances. The lips of the meatus are often stuck together at first when the discharge is thin. In the stage of decline, the pus becomes thin and diminishes in amount. The amount of discharge varies greatly. In some individuals there are only a few drops a day while in virulent cases the pus seems to form as rapidly as it is wiped away. A **tickling** or itching sensation is usually present at the meatus or just within the urethra. This symptom is usually quite distressing and usually means that the lacuna magna are involved. Burning on urination is a cardinal sign and causes the patient much concern. Pain is present during erection, urination and ejaculation. There is swelling and redness of the glans at first, but this soon subsides. The urine is cloudy.

Complications. The following conditions may result:

Phimosis—An inflammation of the foreskin or glans penis which prevents the retraction of the foreskin.

Paraphimosis—A condition due to the contraction of the foreskin back of the glans which prevents its normal return.

Balanitis—An inflammation of the mucous membrane covering the glans.

Posthitis—An inflammation of the mucous membrane of the prepuce.

Hemorrhage—Bleeding may occur from the urethral wall due to an attempt to force urination.

Warts—Warty excrescences may form on the glans. The growth of these warts is stimulated by the acrid secretion.

Bubo—An inflammation of the inguinal lymph glands, with pus formation. A rather infrequent occurrence in gonorrhea.

Opthalmia—An inflammation of the eye caused by the gonococcus.

Cowperitis—An inflammation of Cowper's glands.

Arthritis—Gonorrheal inflammation of the joints.

Folliculitis—Inflammation of one of the glands of Littre or retained pus within one of the crypts.

Diagnosis. The diagnosis is made on the history of exposure. A man comes down with the gonorrhea four to seven days after a suspicious intercourse. The presence of the creamy yellow discharge and the finding of the gonococci serve to clinch the diagnosis. The meatus is reddened, and the glans swollen. The first glass of the two glass tests is cloudy while the second glass is clear. Gonococci may be obtained from the discharge by culture methods.

The Two Glass Test. The patient is given two clean drinking glasses and told to urinate into one glass a small amount of urine. Indicate with your finger that you wish enough urine to fill the glass about one inch. Have him urinate all the rest into the second glass. When the patient has finished, take one glass in each hand and hold them up to the light. The test in acute gonorrhea is interpreted as follows:

1st Glass Cloudy. 2nd Glass Clear.	Acute Anterior urethritis.
1st Glass Cloudy. 2nd Glass Cloudy.	Acute Posterior urethritis.

The basis of the test is due to an anatomic consideration of the urethra which is divided into two divisions by means of the cut-off muscle. If the affection is limited to the anterior urethra, the urine will sweep all the pus out during the first washing, which will cause the first glass to be cloudy and the second glass being devoid of pus will be clear. In posterior urethritis, the infection has passed the cut-off muscle and entered the bladder where the bacteria multiply and cause the content of the bladder urine to become cloudy. Therefore, in posterior urethritis both glasses will be cloudy.

Course. No definite time can be given as to the duration of the disease for no two people are affected alike. There are many factors which enter into consideration. The duration of the average case is about 6 weeks to two months. If the patient begins treatment at once and if he comes into the hands of a physician who knows how to treat him correctly, the course will be mild. The individual resistance is a potent factor, for some people have a susceptible urethra that can stand but little, while others have a tough urethra and mind the infection but little. The initial case of gonorrhea is more severe than subsequent ones. Some organisms are very virulent and very hard to control. One case was most resistant and took three months to cure. Buccal coitus is more frequent than generally supposed, due to the supposed protection from gonorrhea which, however, is untrue. Due to police suppression, prostitutes must ply their trade in a hurry which accounts for the increase of this method.

Acute Posterior Urethritis. Gonorrhea of the posterior urethra, i. e., prostatic and membranous urethra, is due to an extension from the anterior urethra. This may be caused by non-treatment plus heavy work. Incorrect and too strenous treatment will also hasten and bring on a posterior urethritis. The passing of instruments up the urethra in the fulminating or acute stage is absolutely contra-indicated. By "shoving" instruments up the urethra, and this is a term that may be aptly applied to the way those unacquainted with the disease may attempt a cure, is an almost certain way to turn an acute anterior urethritis into a posterior affair. Over-exertion such as strenuous exercise, walking long distances, horse-back riding and lifting heavy objects will certainly aid in promoting the extension of the disease. Intercourse in acute stages is detrimental. Constipation is also harmful.

Pathology. An inflammation of the membranous and prostatic urethra similar to that which occurs in the anterior urethra except that the glands of Littre and crypts of Morgagni are not present in this part of the urethra.

Complications. Prostatitis—An inflammation of the prostate gland which enters by way of the prostatic ducts.

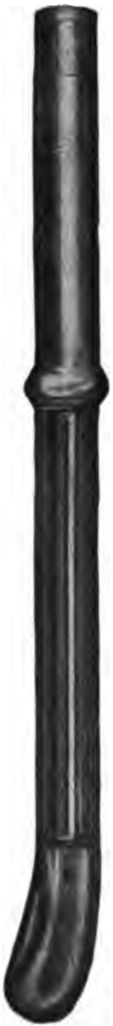


Fig. 1

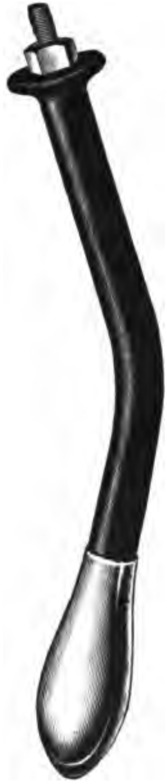


Fig. 2

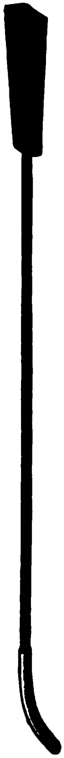


Fig. 3

Fig. 1. Non-vacuum prostatic electrode.
Fig. 2. Rectal electrode for prostatic massage.
Fig. 3. Urethral electrode.

Inflammation of the prostate occurs in most cases of posterior urethritis.

Seminal Vesiculitis—An inflammation of the seminal vesicles which enters via the ejaculatory ducts.

Epididymitis—An inflammation of the epididymis due to the infection being brought down the vas deferens.

Deferentitis—Inflammation of the vas.

Cystitis—Inflammation of the urinary bladder.

Peritonitis, endocarditis, arthritis, bursitis and rheumatism are rarer complications.

Symptoms. There are two forms, the mild and severe. In the mild form the patient may go about his work, noticing no change. In the severe form, the patient is quite ill and confined to his bed.

The posterior urethra may become affected any time during the course of an anterior urethritis, though it occurs most usually along about the third week. There is usually a sudden cessation of the discharge which throws the patient and physician off their guard and the patient begins to feel elated. A severe chill announces the onset of the condition and is followed by high fever with retention of urine. There is a feeling of heaviness accompanied with pain in the perineum and glans after urinating. There may be slight hemorrhage after urinating due to the tenesmus. In this stage the patient is quite ill.

Diagnosis. The diagnosis is made on the above symptoms and the presence of complications.

Chronic Anterior Urethritis. A chronic inflammation of the anterior urethra is characterized by a small amount of discharge containing the gonococci. There may be no discharge at all, but gonococci may be found in the extruded shreds, by centrifuging the urine and staining the sediment.

Etiology. Lack of treatment or too intense treatment will cause an acute case to turn into a chronic one. You can do more harm by over-treating than you can by under-treating.

Faulty or improper use of instruments will do the same thing. Many physicians do not know the proper indications for steel sounds and because of their lack of knowledge pass a sound on most every case that comes along. This injudicious use of sounds will be spoken of later, but one of the worst cases of gonorrheal rheumatism ever seen occurred in a young man with an acute urethritis. The physician roughly passed a sound and so traumatized the urethra that the organisms spread to the rest of the body. Chronic alcoholism also lowers the resistance of the genital tract and predisposes to chronic infection.

Pathology. There is an infiltration of round cells in the glands of Littre and crypts of Morgagni. There are small areas of granulation tissue which replace the eroded areas. If the lesion is superficial there is formed a thin layer of connective tissue which is partly absorbed. If the lesion is deep there is a larger amount of connective tissue formation with contraction. This gives rise to a stricture. The glands of Littre may undergo atrophy by connective tissue growing through them. Occasionally they become cystic and swell because the duct is obliterated and abscess formation may occur therein.

Symptoms. The main symptom of a chronic anterior urethritis is the discharge which is thin and scanty and hardly perceptible at times. Ofttimes the only sign is a drop of discharge in the morning which may be quite thin but usually is of creamy color and creamy consistency. No discharge is noticed during the day because the urine washes away any accumulated secretion. The **morning drop,** however, represents the accumulation of the entire night's secretion. The usual statement made by the patient is: "Doctor, there's absolutely nothing wrong with me, except that drop in the morning." The two glass test cannot give us accurate information but it does inform us somewhat as to the extent of the affection. If the infection is limited to a very small area the first glass will be clear, but will contain shreds; the second glass will be clear. If the infection is spread over a considerable area of the anterior urethra, the first glass will be turbid and contain some shreds, the second glass will be clear. Another symptom is itching within the urethra just back of the head. On urination the same site is sore. Inflammation within the lacuna magna usually causes this.

Complications—Stricture formation, hard or soft.

Diagnosis. The diagnosis is made on the history, the above symptoms and the finding of gonococci within the discharge. The urethroscope may show areas of erosion, granulation or stricture.

CHRONIC POSTERIOR URETHRITIS

Diagnosis. Chronic inflammation of the posterior urethra.

Pathology. Inflammation of the deep or posterior urethra is different from that of the anterior urethra in that there are no glands of Littre in this part. The difficulty in chronic gonorrhea of the posterior urethra is not so much the inflammation confined to the urethra, but to the infection in the neighboring structures. The tissue around the urethra (periurethral tissue) is hardened. There often are small granular areas. The verumontanum is often inflamed.

Symptoms. The discharge is usually very small with a morning drop similar to that seen in chronic anterior urethritis. If the infection is slight the two glass test will show the urine to be quite clear with a few shreds, and Fürbringer hooks. Fürbringer hooks are comma shaped shreds formed in the prostatic ducts. If the first morning urine is collected it may be somewhat cloudy. If the infection involves the anterior and posterior urethra, the two glasses will be cloudy and contain some shreds. There is present, usually, frequency of urination due to irritation of the posterior urethra. The sexual symptoms in chronic posterior urethritis are pronounced. The desire for sexual intercourse is greatly increased at first due to the constant irritation of the verumontanum. The sexual union, however, is not satisfactory and this often brings the patient to the doctor. Premature ejaculation is often the distressing feature and the patient's chagrin at not being able to satisfy his partner, causes him to begin to search for the basis of the trouble. There may be loss of semen while defacating due to involvement of the seminal vesicles and wet dreams or seminal emissions while asleep are increased. This increase of sexual desire is often followed by a decrease in desire and finally impotency. The resulting symptoms are those of a hypochondria. The patient begins to complain of pains and aches all over his body, particularly in the small of the back. He is apt to build up a picture of the cause of the condition which is so far removed from the actual nature of the trouble that physicians are apt to be led astray, not suspecting an old gonorrhea may account for the condition. Most syphiletics are liars when it comes to finding anything out about themselves. So, too, most people do not like to own up to the fact that they once had a gonorrhea. They should not feel this way about it but they do. If the condition goes undiagnosed or untreated, the nervous disturbances increase and the vague pains are more constant. Characteristic, also, is the shifting character of the pains. Finally, sexual neurasthenia supervenes.

Complications. Prostatitis usually is associated with posterior urethritis. The large number of prostatic ducts (thirty to fifty) in the prostatic urethra make this complication so frequent. Seminal vesiculitis is an infrequent complication, but is quite resistant to treatment when it does occur. Cystitis may be an associated condition.

Diagnosis. The diagnosis of posterior urethritis is based on the history of previous, as well as the present attack. A man who has had a prostatitis, epididymitis or a severe attack of gonorrhea is very likely to have had involvement of the posterior urethra. Examination of the discharge reveals gonococci. If, on rectal examination, we find an enlarged prostate or seminal vesicles we massage them and collect the expressed secretion on a glass slide and examine it for gonococci.

LECTURE IV

Prophylaxis and Treatment of Gonorrhea

The prophylaxis of gonorrhea received its greatest impetus during the World's War, more especially over seas. Continence was the first policy and although it is the ideal condition, it is impossible to obtain it in war, for several reasons. First, the mobilization of men accustomed to other lines of work and the placing of them where they often were unsuited and unsatisfied, served to produce a condition of restlessness amongst them. Secondly, it is impossible to change the physical or mental makeup of men in a few weeks or months. The sexual instinct has always been with us. You may bridle it to a certain extent, but that is all. It is easy enough for those, who while in the army still enjoy the comforts of family and home, to issue orders which they, themselves, could not fulfill. Prophylaxis does not stimulate nor further the incidence of illicit contact. Prophylaxis is venereal insurance and is to be regarded as a protective measure in the same light as life or fire insurance. Life insurance tends to increase longevity and further the doctrine of good health. Fire insurance brings out better means of protecting against fires and also reduces the number of fires. Venereal prophylaxis tends to show the greater danger in venereal diseases and how to prevent them. Franklin says in his Autobiography, "In the meantime, that hard-to-be-governed passion of youth hurried me frequently into intrigues with low women that fell in my way, which were attented with some great extent and great inconvenience, besides a continual risque to my health by a distemper which of all things I dreaded, though by great, good luck I escaped it."

The condom of either the rubber or fishskin variety is one of the safest methods. True it is, they break, but this often is due to the fault of the user rather than the article. Condoms must be kept in a dry, cool place. If carried in the pocket for some time they rot, due to the accumulated perspiration and pressure. If the condom is covered with the K. Y. lubricating jelly before use, the amount of friction will greatly be reduced and the danger of their rupturing will be practically nil.

Tar soap and warm water are about the two best agents we possess. After intercourse, a rich fine lather is worked up and the penis, scrotum and suprapubic region are thoroughly washed. Care must be taken that all tenaceous mucous be removed. Then urinate to clean out the canal and dry all parts carefully. If, while urinating, the meatus is held closed for about 5 or 10 seconds it serves to dilate all portions of the urethra and adds force to the urinary stream. In addition thereto, one and one-half drachms of 10% argyrol, silvol or 1% protargol may be injected into the urethra with a two drachm syringe, and the meatus is held closed with the thumb and forefinger for five minutes. This is then allowed to flow out and the head, body of the penis and the suprapubic region are rubbed with a drachm of the following ointment:

Calomel	33 grammes.
Lanolin	100 grammes.

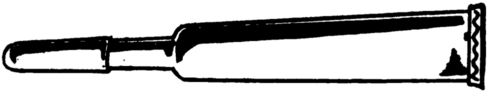
Massage the penis in the same manner as you would apply cold cream to your face, paying particular attention to the groove back of the head and the G string. Cover over the head of penis with a piece of toilet paper and hold it in place with a rubber band.

For general use, however, the above method may often be found difficult and so the prophylactic tube was devised whereby the same substance might be used for gonorrhea as well as syphilis.

The formula for the substance used in the prophylactic tube is:

Adepsis	50.0 grammes.
Calomel	32.5 grammes.
Lanolin	15.0 grammes.
Acid Carbolic	1.5 grammes.
Camphor	1.0 grammes.

Thanks to Metchnikoff whose genius has given us this formula and though he will never openly receive the thanks of the world due him, he nevertheless is one of the greatest benefactors of mankind.



PROPHYLACTIC TUBE.

Directions for Use. Before intercourse expel some of the cream on the head, in the groove, back of the head and on the G string or frenum. Smear it over as a lubricant. Insert the conical end of the tube into the meatus and inject by squeezing base of tube. After intercourse, urinate and wash penis with soap and water. Squeeze some of the cream into the urethra and smear the head and body with the remainder. Cover the head with a small square of toilet paper and hold it in place by means of a rubber band for three hours.

Treatment of Gonorrhea. To successfully treat gonorrhea you must first treat the man and secondarily the disease. Everything depends upon the first impression the patient receives. He is especially susceptible at this time and any statement you make will be branded upon his mind. There is a tendency among the laity, and this has spread to the profession, to regard gonorrhea as a joke. The talk goes around that a dose of gonorrhea is no worse than a cold. Often physicians have laughed at men with gonorrhea and treat the man as though the disease with which he was affected was of a light and trifling nature. Gonorrhea is a serious disease. It has the attention of every national body of men interested in the welfare of the nation. Governments everywhere are interested in subduing this affection. True it does not kill directly, but it does undermine and tend to destroy the fibre of a country. Disease due to the affections of the genital tract will destroy the manhood of a nation quicker than all the shot and shell put together, and if a study is made of the fall of nations it will be found that healthy nations endure, while those sickened with some plague or loathsome disease are bound to lose their place in the sun.

The history of the man is first taken and the facts briefly noted on a card. Then have the man stand up and tell him to open his trousers and inspect his penis. Usually he will have a cloth or rag around it which you will ask him to remove. Inspect the meatus and if there is some creamy yellow or greenish gray discharge, the chances are that the case is gonorrhea. Make two smears on glass slides and if you have a miscroscope make a methylene blue stain. If there are many intra-cellular cocci with pus cells in abundance, you may presume the case one of gonorrhea, particularly if the history is confirmatory. Now you must utilize all your psychic force and tact and looking straight at your patient in a gentle but firm manner tell him that he is suffereing from a disease known as the gonorrhea or clap. This disease, if untreated, is a most serious one. It will not show its effects immediately, but in later years will affect his power to have intercourse and may destroy his chances to have children. If he is uncured, he may pass this disease to his wife. "Do what I tell you, live as I tell you, and you need have no fear." If this has all been spoken correctly, the man is in the proper mental attitude to do anything you wish. Inform him that he cannot be cured in three days as he may have heard of such a cure. The case will take anywhere from three weeks to three months, and inform him you will get him well as soon as it is humanly possible. As soon as he is well, you will discharge him.

Directions to the Patient. If a physician has quite a number of gonorrhea cases he may save time by having the directions mimeographed and present a copy to the patient. This aids in making a good impression on the patient. Intoxicating liquors and beer should be prohibited as they aggravate the condition. Peppery, spicy foods and pickles should be avoided. All strenuous exercises such as horse-back riding, bicycling and dancing should be forbidden. Sexual indulgence is very apt to bring on complications and make the case a resistant one to treat. See that

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the patient comes regularly with a full bladder of urine. See that the patient drinks plenty of water (six to ten glasses a day). Washing the hands after touching the penis is absolutely essential. The bowels should move twice a day. The Olympian suspensary should be worn. The patient should urinate before taking the injection. The older school of physicians were very exacting about the diet but with the exception of spicy foods, which are apt to stimulate the sexual desire, the diet should be substantial. Fairly large quantities of water should be drunk because it flushes out the urethra and any pus contained therein. The patient may smoke as he habitually does. A hot bath for 15 minutes every morning and evening is of much benefit.

Sample Instruction Sheet

Personal Advice to Those Having Gonorrhea

1. Do not drink beer, whiskey or alcohol in any form.
2. Do no heavy exercise, as dancing, bicycling or horseback riding.
3. Take things as easy as you can. Go to bed early. Keep off your feet as much as possible.
4. Do not indulge in sexual intercourse.
5. Drink plenty of water (six to ten glasses per day).
6. Your bowels should move at least once a day. Twice a day is to be preferred.
7. If your case is a simple one and you do not violate any of the instructions, it takes three to six weeks for a cure. If any complications come up, it may take three

months. Ten day cures stop the discharge and also push the disease up inside and destroy the nature power.

8. Urinate before injecting and if you can't urinate, wait until you can. When you come to the office, have a full bladder of urine.

9. When your discharge stops it does not mean that you are cured. The gonococci which are the cause of clap are so small that they cannot be seen with the naked eye. Put full confidence in your physician. If your disease is uncured, it will cause your sexual apparatus to be affected in later life.

10. Do not put your hands to your eyes after touching your privates, as gonorrheal pus causes blindness. Wash your hands with soap and water after touching sex organs.

Internal Treatment of Gonorrhea

There are a host of substances that may be used for the internal treatment of gonorrhea, but it is best to limit one's self to a few drugs and master them. Of course there are some men who decry internal treatment, stating that a drug administered internally can have no influence on a local disease. The proper method of treating gonorrhea is to make it as agreeable as possible, combined with the best known technic. The patient is the criterion and many physicians lose their venereal disease patients because they have no sympathy for them. Be kind, be sympathetic, be magnanimous at all times. The pain and burning on urination is the most distressing symptom to the patient and the following prescription quickly relieves this condition and makes the urine bland.

℞

Potassium Bromide	8 g.
Potassium Citrate	10 g.
Tincture Hyoscyamus	15 g.
Syrup of Orange	40 g.
Aqua qs. ad	120 g.

S. One teaspoonful in ⅓ cup hot water every four hours.

The bromide and the hyoscyamus relieve the irritability of the nerve endings. The potassium citrate serves to alkalinize the urine and make it bland.

As the acuteness of the patient's symptoms abate, the potassium bromide may be decreased or omitted.

When the patient has finished with this prescription he is given:

℞

Capsules Sandal-wood (Olei Santali) oil
5 m. Capsules No. 30.
Sig. Two capsules three times a day after
meals and two capsules at bed time.

With this you prescribe:

℞

Mixture of Rhubarb and Soda 100/.
Sig. 3 ii T. I. D. 2 hours after meals.

The rhubarb and soda tend to relieve any gastric irritation produced by the santal oil and also keeps the bowels open.

These prescriptions are continued, gradually reducing the amount of sandal-wood oil until the patient is taking

15 to 20 drops a day. To some folks, however, sandal-wood oil is disagreeable in that it irritates their stomach. In such case, one of the proprietary preparations such as gonosan or santyl may be tried. If these fail, then stop sandal-wood oil medication. In such cases soda bicarbonate, one level teaspoonful four times a day in a glass of water serves to keep the urine bland. I have used soda bicarbonate or mik of magnesia single handed and have secured excellent results.

Local Treatment. For the successful local treatment of gonorrhea, it is necessary to have laid down certain definite principles concerning the character of the urethra. The mucous membrane of the urethra is as delicate and sensitive as the membrane of the eye and if treated with the same respect, the results will be gratifying. It would indeed be well, if a physician would, for a trial, first inject some of the solutions he orders for his patient into his own urethra. If any one has experienced the pain and intense irritation produced by a strong injection, he can readily realize the cause of the slow progress made in the treatment of gonorrhea. Strong irirtating solutions reduce the resistance of the urethral tissue by injuring them. We cannot expect to conquer an enemy when we break down our wall of defense.

Another cause for the unintelligent use of antiseptics is because the average mind believes, that while a 5% solution of a drug is efficacious, a 10% solution is doubly so. False reasoning such as this has done untold harm to many an urethra. Our purpose should ever be to kill the organism and raise the tissue resistance. If we make the solution too strong we kill the organisms on the upper layer and so injure the tissue that the microbes deep down escape. These bacteria may now multiply because the wall that has been holding them back has been broken.

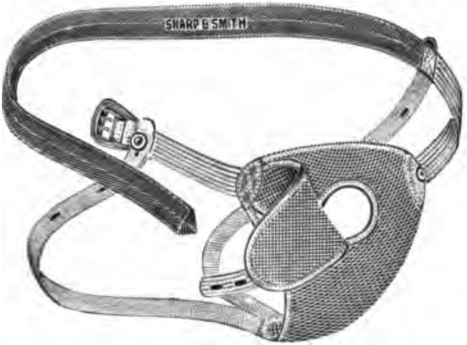
When a man presents himself with a severe fulminating gonorrhea and these types usually occur in the initial infection, remember that his urethra is in a highly irritable condition. The tissue is doing its best to defend itself and the profuse discharge is a representation of the severity of the process that is going on. Prescribe a solution for injection, not for its germicidal value, but only to serve as a cleansing agent. Warm potassium permanganate, strength 1 to 20,000 or 1% bicarbonate of soda are efficacious. The solution is injected and held within the urethra a minute. This is then let out and the injection is again repeated holding the solution in one minute the second time. This is done once or twice again. Repeat the same procedure every three hours. The acute symptoms will usually subside in one to three days when the regular treatment may be commenced.

What drug do you use in acute gonorrhea, is a question which I am daily asked. Everybody is seeking a wonderful drug but the answer to the problem is right at your own doorstep. Success depends not upon the drug, but on knowing what strengths to use, when to change the strength of the drug, when to change to another drug and how to look for pathological changes. One of the safest and most satisfactory, to begin with, is potassium permanganate solution of the strength 1 to 8000. Some may accuse me of prescribing homeopathic strengths but I assure you these strengths will do no harm and much good. The patient is seen daily and if good progress is made the strength is rapidly increased by 1000 at a time. If the second day the patient complains of no irritation, after injecting the medicine, the strength of the solution is increased to 1 to 7000. If the patient's discharge is lessening and the cloudiness of the urine is improving and no irritation is present, the solution is increased to 1 to 6000 and so on until 1 to 3000 if necessary. When the discharge is very slight and shows no tendency to become better or worse it is time to discontinue the potassium permanganate. A smear is then made and if no gonococci are found an astringent is then prescribed.

If the patient does not seem to improve under the permanganate treatment, change to a 2½% silvol solution. Injecting 1½ to 2 drachms Q. I. D. The strength of the solution is increased as improvement takes place to 5, 7½ and 10%. If the results are not satisfactory under silvol change to ⅛% protargol solution. The strength of protargol should be very gradually increased to ¼%, then ½%, ¾% and finally 1%. Acriflavine 1 to 5000 produces results in many resistent cases.

The reason for the changing which often brings marvelous improvement is due to the difference in organisms. Some organisms respond to one drug faster than they do to another. In other cases if treatment is continued with one drug for a long time, the organisms become "fast" to the drug, that is, they are no longer susceptible to the substance that is endeavoring to destroy them. Another excellent plan is to prescribe two different solutions and allow them to be used on alternate days, e. g., the argyrol one day and the permanganate the next, and so on.

The suspensory is an important article in the treatment, as it serves to keep the penis at rest; makes the collection of the discharge easy and also supports the testicles and so prevents complications. The Olympian suspensory is one of the best and the patient should be directed to purchase one.



OLYMPIAN SUSPENSARY.

It is of vital importance that the patient be shown the proper method of injection. The syringe is filled with the solution and by means of light, steady pressure the piston is slowly forced in. Plenty of time should be taken, as there is no hurry. A good position is the sitting posture. No force should be used. When the discharge becomes scanty and the microscope shows it to be free of the gonococci, we use an astringent and antiseptic solution. Zinc sulphocarbolate in a strength of 1/5% is prescribed and two drachms injected four times a day and held in four minutes. As the secretion gradually diminishes, the strength of the solution is increased so that the urethra cannot become accustomed to the drug. Therefore, increase the strength of the zinc sulphocarbolate solution to

⅓%, ½%, ¾%, or even 1 or 2% will be necessary. Infrequently it will be necessary to change to another mild astringent but this is quite rare.

No two urethras hold exactly the same amount, but six cc is the capacity of the average anterior urethra. Do not try to force in all the medicine in the syringe as this will do harm. Be gentle at all times. If the urethra only takes five cc, then only inject this amount.

Urethras may be divided into three types, the hypersensitive, the normal and the resistant urethra. If the patient has a urethra of the first type it is necessary to be extremely careful, and if of the last type we must increase the strength of our solutions.

In acute gonorrhea no instrument should be inserted into the urethra.

When the patient comes to your office, first make him feel comfortable. Then examine the discharge. Have the patient urinate into two glasses. Record any facts on the history sheet.

Treatment of Acute Posterior Urethritis

Stop all local treatment.

Put the patient to bed.

Prescribe a mild diet, keep the bowels open. Give sandalwood oil internally, 10 minims in capsules after every meal and at bed time. If urination is especially frequent and painful advise the patient to sit in a hot tub of water and urinate.

Apply radiant heat over the suprapubic region, or use an electric pad applied to the suprapubic and perineal regions.

Hot Sitz baths are excellent.

If the pain and tenesmus are severe, prescribe the following:

℞

Extract Belladonna .... ¼ grain
Extract Opium .... ½ grain
Cocoa Butter Q.s. ad........... 30 grains
Make twelve such suppositories.
Sig. Insert one in rectum every four hours until relieved.

After the acute symptoms subside, allow the patient to rest for several days before attempting local medication.

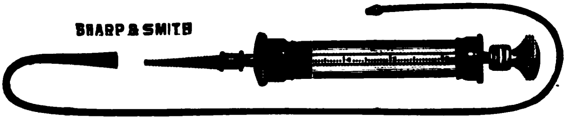
LECTURE V

Chronic Gonorrhea

We now arrive at a subject that has caused many a physician to turn in his bed and spend many a restless night. Everyone has been confronted with cases of chronic gonorrhea in friends; when it was essential to get results. Usually the man wanted to get married or something like that and he wanted to get well. Some patients stick and it is up to us to get them well. Others lose confidence and go to another physician and then to another. This constant travel of the patient from pillar to post is called making the rounds and often lands the patient in a dispensary, only to remain in the same category. What, then, is the trouble? Wherein lies the difficulty? Can chronic gonorrhea really be cured? Chronic gonorrhea can positively and definitely be cured but it takes time, patience, tact, knowledge and equipment.

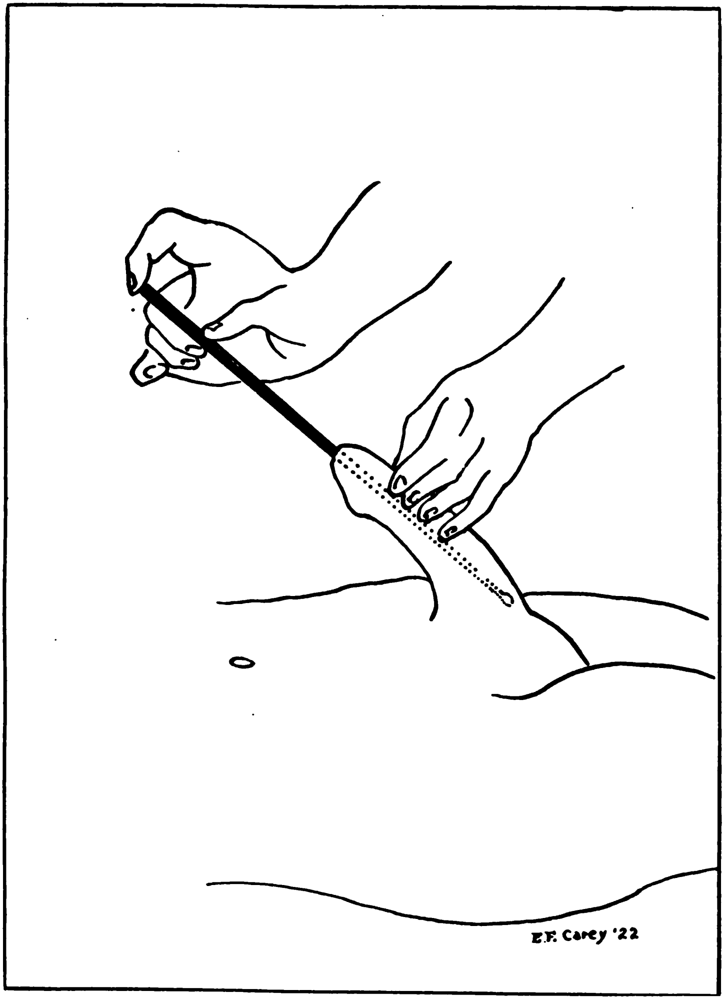
To treat chronic gonorrhea we must first locate the focus of infection and when we do, we are in the proper position to treat it. The gonococci are very often lodged in the deeper recesses of the prostate gland, or occasionally they may inhabit the seminal vesicles. If they are in the seminal vesicles, there are usually no symptoms until after intercourse, when a discharge bobs up, only to die down again. The patient usually thinks that he has a fresh dose, but gets over it quickly. If the prostate is involved, we can determine that quite nicely and quickly by rectal palpation.

If we elicit a sore, sensitive spot in the prostate and express a secretion containing gonococci this, then, is the site which we must attack. Secretion may also be obtained from the seminal vesicles by means of a metal instrument, it being most difficult to reach them with the finger. Strictures along the urethra either in the posterior or anterior urethra are the next most frequent site and this can be elicited by passing a bulbous bougie along the urethra. Gonococci have the facility of burying themselves deep within this scar tissue and even though it is stated by some workers that gonococci tend to run themselves out, that is, they die off within the space of two years. Many men, however, will testify that gonococci will remain within the urethra for many, many years. Another site is in the glands of Littre and these can be elicited by passing an English or French bulbous bougie and palpate, by running the thumb and forefinger up and down the undersurface of the urethra. These glands are tender to touch and the patient will readily inform you when you touch one of these infected follicles which feel like shot.



GUYON SYRINGE AND CATHETER.

A word about the indiscriminate use of metal sounds would not be out of place. Metal sounds have a need in genito-urinary work, but their faulty and needless employment has done an untold amount of harm. Many men pass or attempt to pass a sound to give the patient the impression that something is being done for them, when they



Palpating follicles of anterior urethra by means of bulbous bougie.

have not the least possible conception as to what it is all about. Complications arise daily and many a case of gonorrheal rheumatism and endocarditis can be traced to the universal use of this instrument. For the most part silk and linen bougies can do the necessary work within the urethra and it is pretty hard to do any harm with them. The safest rule in treating a man is to think of yourself in his position. If your eye was inflamed you would not jab around with a steel instrument, and the urethra is a similar structure.

Urethroscopic work has been greatly lauded, particularly its power to locate definite areas of pathology and to treat same. While the urethroscopic craze was going around, the instrument was extensively employed, but the amount of good done is very dubious. Silver nitrate was applied within the urethra in very strong solutions, it being the opinion of the workers that you could get into the little glands and crypts and cauterize them. This is a vague dream. It is an anatomic impossibility in the first place. The infection is not limited to a few glands and in the second place you can't get into them. Even cauterizing them with a fine electric wire is not tenable. The result of all this work is that many strictures have been produced, many complications stirred up and little good accomplished. The cardinal rule for any urethroscopic work is "Do not harm the patient."

The general treatment of chronic gonorrhea consists in measures that will raise the resistance of the patient. Good substantial foods, that is, a well mixed diet should be eaten at all times. Many people think they can starve a disease out, but only weaken themselves and lower their resistance.

Fresh air is also one of the great body activators and also serves to stimulate all other functions of the body. Sunshine is an aid, in that it generates antibodies which tend to root out noxious agents. The weak, anemic chronic gonorrhoic does not make much progress no matter what you do for him. Build such a patient up by putting him in the sunshine and you have a candidate for your list of successful chronic g. c. cases. Since it is economically impossible for many to go out and seek the sunshine, we must produce it as best we can, and in ultra violet light therapy we have a means of giving any amount of sunshine, to any part of the body. When we are informed that sunlight will kill tubercle bacilli in a few minutes, we think nothing remarkable about the statement, but when we also hear that the bacilli in dried sputum are all able to withstand a temperature of 100° Centigrade for an hour, we have an agent that may appear mild but is highly effective. The technic for giving the ultra-violet baths takes time but it will give results. We sincerely believe that the physician who rids a man of chronic gonorrhea does an inestimable amount of good, not only to the patient, but to his future wife, children and to the nation. There are no short roads to success. We can well remember the day when a man with tuberculosis was given but little chance to survive.

The patient undresses completely and with only goggles to protect his eyes he is given 1 minute exposure with the air-cooled lamp at 40 inches distance, over the anterior surface of his body. He is told to lie on his abdomen and the same dose of light is administered to the posterior surface of the body. A slight amount of erythema may appear in four to six hours, and the patient is warned of this so as not to be alarmed. The treatment is repeated every other day, the time of exposure being increased as a general rule by 1 minute until 10 minutes is reached. After that the distance of the lamp from the patient is decreased by 1 inch at every treatment. No hard and fast rule can be laid down for this procedure for no two patients require the same dosage and no two people react in a similar manner. Brunettes as a general rule can bear more light than blondes. If perchance we have struck a susceptible individual, we do not increase the time of exposure nor do we decrease the lamp distance to the patient, but allow another day or two to elapse before giving another general body treatment. Results from light-therapy manifest themselves slowly, as do all results in chronic cases but if your patient picks up weight and strength in general do not be surprised.

Local Treatment. Old prostatic infection is one of the most frequent causes of chronic gonorrhea and when the prostate is rid of them the gonorrhea gets well. Try as one would by the methods of the old school, he is bound to end in failures in many cases and so is forced to coin the dictum, "Chronic Gonorrhea is an incurable disease. God only knows when it ends." And what is the reason for that failure? The answer is that he has not a single means of reaching beneath the surface. Massage of the prostate and the psychrophore are his only hope, plus silver nitrate irrigation. The amount of heat capable of being sent through the prostate is small, for if the psychrophore be made too hot the metal sticks to the mucous membrane and is painful. Irrigation by means of catheters in the rectum is an impossible proceedure in most homes and is not desired by any patient. These methods are antiquated. They represent horsepower compared to steam and electric power. Anyway, the area heated is small and the result slow. Diathermy and ultra-violet light therapy administered to and through the prostate per rectum are two of the most valuable agents known to science today and by means of their correct use, we can rid most any prostate of its infection. The technic essential to their proper employment will be discussed under prostatitis.

Next in frequency as to etiology of chronic gonorrhea is stricture. Within the walls of a stricture gonococci may remain viable for a long period extending into years. Proper methods of diagnosing and treating stricture are discussed under the heading stricture. Here, too, gentleness in the method of handling plus physiotherapeutics will convert what was formerly a dreaded proceedure into that of an ordinary task.

Inflamed glands along the anterior urethra may also contain the gonococci and often the patient will be able to place his finger on the area that is sore. Especially does he notice this when he urinates. By the introduction of a bougie, the glands may be gently massaged as described on page 91 and their contents partly expressed. Massage tends to hasten healthy tissue formation. Ultraviolet light applied extra and intra-urethrally in these cases is a most valuable aid when the usual methods of treatment fail.

In giving general ultra-violet light treatments, it is not necessary to have the patient undress entirely. By taking off his shirt and loosening his trousers, the body can easily be exposed down to the knees. For extra urethral work with the blue filter and pressure to the outer surface of the penis, it is best to have the patient stand while the operator sits on a stool. The operator holds the water cooled lamp in one hand and makes slight pressure against the penis. The first treatment should be one minute increasing the treatment each time by one minute. Results will be had when the exposure reaches about 5 to 6 minutes. Before using the lamp, it will behoove the operator to read carefully all directions and become thoroughly familiar with the mechanism. If things do not proceed as smoothly as he thinks they ought to, the operator should not tamper with the lamp but should allow someone who is qualified to inform him where the trouble lies and how to remedy it. There are a few cardinal rules for the use of the lamp in general treatment work.

Do not try to impress your patient with the fact that he is receiving a powerful agent in light, by giving him a severe burn. In order that the operator may have an idea of what a burn feels like, he should, before he begins any treatment whatsoever, expose his arm so as to give himself a slight burn. He will then be very cautious with the use of ultra-violet light.

It is not necessary to burn to produce results. Results can be had without burning. The rays enter the skin capillaries without producing an erythema and only one who has worked with light for some time understands this. Be in no hurry for results, for that is not the way in which the body remedies itself. Follow directions and results will follow.

We have said nothing concerning the use of drugs in the treatment of chronic gonorrhea. Men have earnestly

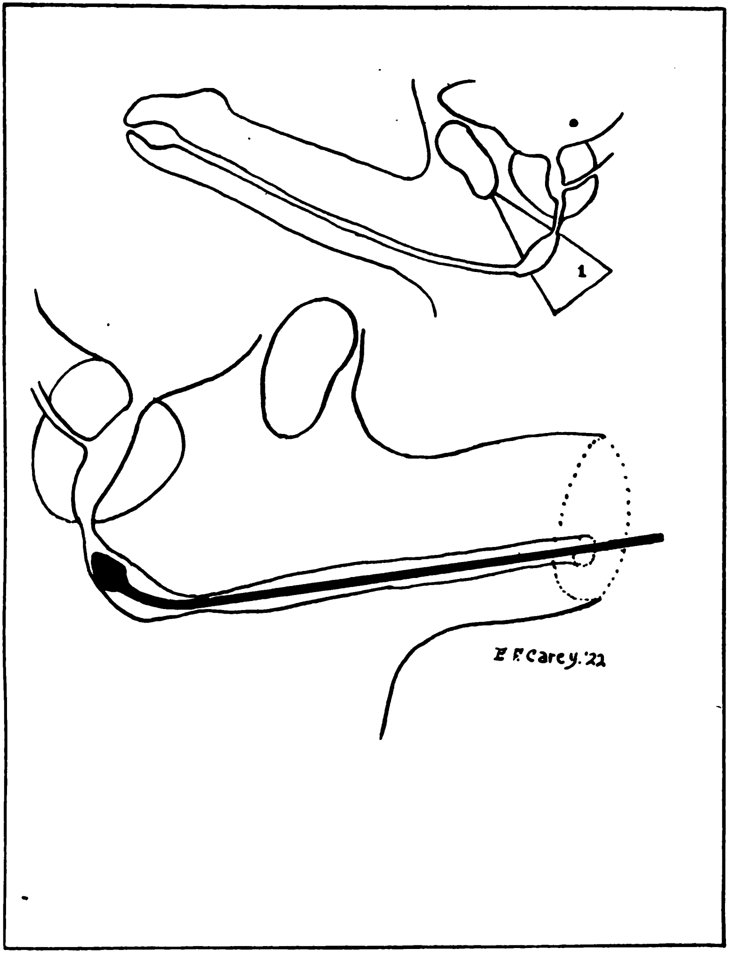


Diagram in upper half indicates relationship of urethra with prostate, seminal vesicles and bladder. Triangle with number shows relative position of cut-off muscle and its attachment to os pubis. Lower sketch is enlarged showing Guyon catheter entering prostatic urethra.

sought a drug to do the work but the search has been in the wrong direction. The problem is to discover the pathology and once that is done the rest is not difficult. The one drug that has a value in chronic gonorrhea is silver nitrate used in very weak dilutions. It acts as a mild stimulant to the tissues and does good. If used in strong solutions it does an irreparable amount of harm. When the chronic gonorrhea has its seat in the posterior urethra, as has been previously remarked, results are obtained by cleaning out the prostate and vesicles. After the treatment two to six ounces of silver nitrate of 1 to 10,000 strength is injected into the bladder. This is accomplished by means of a Guyon catheter which is gently inserted into the urethra after the patient has urinated and then into the bladder. If you are gentle and apply some jelly to the tip of the catheter before insertion, you will avoid any complication. A large syringe is attached to the end of the catheter and the solution injected into the bladder. Before all the solution is injected, however, the last few cc may be applied to the urethra. So, while withdrawing the catheter, continue pressure on the syringe. The solution is held in the bladder for one-half hour when it is passed by the patient while urinating. The strength of the solution is gradually increased 1000 parts at a time until a strength of 1 to 2000 is reached. Rarely it is necessary to increase to 1 to 500 or 1 to 1000. If the anterior urethra is invaded inject or instill silver nitrate beginning with 1/10 of 1% and gradually increasing to ½%. If a slight amount of discharge persists use zinc sulphocarbolate solution strength ½% to 1%.

When Is a Gonorrhea Cured?

It is one thing to cure a gonorrhea and equally important to know when the disease has been cured. How may I be sure when my patient is cured, the average physician is constantly inquiring. As in the cure of gonorrhea, tact, skill and good judgment are the dominant factors, so in determining a cure the same qualities must be employed.

Cessation of Discharge. A discharge that gradually decreases in amount and finally under treatment disappears is not evidence in itself that the gonorrhea is cured. We must look carefully for more evidence.

The urethra is gently milked and if no discharge is present we proceed to massage the prostate and seminal vesicles and examine the secretion for gonococci. If none are found we have the patient partake of strenuous exercise and watch for any discharge. If some appears, it is collected upon a glass slide and examined for gonococci.

Discharge in itself does not constitute evidence of gonorrhea, particularly the mucoid or thin, moist secretion that may cause the urethra to stick slightly together. The infective discharge is usually the creamy kind, but, then, we may be mistaken. Often a man has a mild degree of secondary infection present in the urethra, especially if he has had the gonorrhea for some time. A slight amount of discharge might be due to colon bacilli or staphylococci or some other type of infection. The microscope is the necessary means and a person who understands what is under the lens is equally important. If, on repeated examination, that is, five or six examinations made a few days apart, no gonococci are found, we pass the patient so far as this part of the test is concerned. A competent laboratory should do the work if the physician is not schooled in this work.

Examination of the urine is essential. A clear, sparkling urine in itself is not proof of the absence of gonococci. If any shreds are seen in the urine, the urine should be centrifuged and the sediment stained with the Gram stain for the presence of gonococci. The best urine for this test is the first urine passed in the morning. This work is best done at a laboratory, for the work is tedious and unless a physician has had special work in this line, his interpretation is not apt to count for much. The charge is small and a good laboratory, being a disinterested party, will give you a real examination and report. A few shreds in the urine do not constitute evidence of clap, because after a gonorrhea is completely cured, some men continue to have a few shreds in their urine for the rest of their lives. Also, there are cases of chemical urethritis caused by the injections of medicaments that are too strong or by the prolonged use of such a drug as silver nitrate. A silver nitrate urethritis (and there are many of them due to the indiscreet use of it) will cause the urine to look most suspicious. I had a patient who demanded twenty different tests before I was certain he was free of gonococci. He has been married two years, has a healthy child and a wife who is perfectly healthy.

Some men advocate the passing of large steel sounds, but to me this is unwise. I have seen complications arise from the over-zealous use of steel sounds. Suppose there are but a very few gonococci present and these are being rapidly destroyed by the tissues; by sounding you will only tend to reactivate them and stir things up. Leave a sleeping dog lie, is a wise motto. If it is desired to determine the presence of a stricture, it is best to wait a few weeks and then pass a soft bulbous bougie. You can get all this information you want with a bougie and still do no harm.

The silver nitrate method for determining the presence of gonorrhea has been used for some time because it was handed down and few men had the nerve to question the method. You can determine the absence of gonococci as already outlined without insulting the urethra. Treat the urethra of your patient with respect and you will cure your patients and not needlessly prolong the case. Complement fixation methods may be so perfected in the future as to give us certain data, but for practical purposes have no definite indication. Cultures may be employed for medicolegal work but are unnecessary for routine work.

LECTURE VI

Complications of Acute Gonorrhea

Chordee. Chordee is a condition characterized by a downward curve of the penis, due to infiltration of the corpus spongiosum.

Treatment. If the patient arises or is awakened with the chordee, he should wrap the penis in cold packs or immerse it in cold water. As a prophylactic, give elixir sodium bromide from two to four drachms at bed time. If this does not suffice, then a rectal suppository inserted at bedtime which contains ⅓ grain morphine sulphate and ¼ grain of extract of belladonna.

Phimosis. A condition in which the orifice of the prepuce is too small to allow retraction of the foreskin so as to uncover the glans.

Treatment. Soak the penis in hot water and inject some of the hot water beneath the prepuce. Do this for 20 minutes every hour or two, with gentleness and patience. You will succeed in retracting the foreskin. However, if this fails, and gangrene or ulceration seems imminent, do a dorsal slit. Do not attempt a circumcision in the acute stage.

Technic for Dorsal Slit. Clean the secretion beneath the prepuce if possible with soap and water. Put groove director beneath prepuce and cut with scissors upon the director. Do not put in a stitch unless hemorrhage is bothersome. Smear ammoniated mercury ointment on a piece of gauze bandage and wrap around the wound. Dress daily. Do circumcision later.

Paraphimosis. A condition in which a tight foreskin is inflamed and edematous and caught back of the corona of the glans so that it cannot be retracted. It is also known under the name of "Bull-Headed Clap."

Treatment. The prepuce may be returned in most cases by correct manipulation. Clean the penis with cold water and soap. Smear a little vaseline on the foreskin. The thumb of each hand is then pressed against the glans while the first and second fingers hook themselves back of the swollen foreskin. The thumbs push forward and the fingers draw backward. Now the glans slips into position. If the constriction has lasted for some time, with edema and cyanosis marked, and gangrene is threatened, cut the constricting bands with a tenatomy knife over a grooved director. For anaesthesia use 2% novoçaine. Dress with ammoniated mercury smeared on a gauze bandage.

Balanitis. An inflammation of the mucous membrane covering the glans.

Etiology. It may be caused by a chancroid, chancre and by smegna and anaerobic bacilli found in retained secretion.

Symptoms. A thick creamy offensive discharge is present, associated with itching and burning of the glans. The tissue is red and excoriated, and there are shallow ulcerations present with dirty white borders.

Treatment. Wash glans and foreskin with soap and water. Rinse thoroughly and apply a little ether to any ulceration. Interpose a small narrow strip of gauze between the glans and foreskin, by rolling the foreskin back and holding the gauze in position with a small wooden applicator. Allow the prepuce to assume its normal position. If ulcers persist cauterize with 5% silver nitrate.

Posthitis. An inflammation of the mucous lining of the prepuce and treated the same as balanitis.

Balano-Posthitis. An inflammation of the mucous membrane covering the glans plus inflammation of the mucous membrane lining the prepuce. It is treated similar to balanitis.

Venereal Warts. Papillomata. Warty growths on the genitals and anus occurring in both sexes, varying in size from a pin head to a hazel nut or even may be large enough to cover the entire glans. The condition is not necessarily venereal and may be due in women or men to acrid secretions. Other familiar names are verruca and vegetations. Condylomata lata resemble them but are due to syphilis.

Etiology. Irritating discharge between two moist approximating surfaces. This condition may be caused by a tight foreskin, gonorrhea, chancre, chancroids and balanitis.

Pathology. Hyperplasia of papillae of skin.

Diagnosis. Made on the appearances of the warts, which if small, resemble a miniature cockscomb. If large, a cauliflower growth. The associated condition of the penis and microscopic examination may be necessary to establish diagnosis. The condition must be differentiated from condylomata lata which are due to syphilis. Usually there are other signs of syphilis present and the lesions respond to anti-syphilitic treatment. Epithelioma occur later in life and the regional lymph glands are enlarged. Microscopic examination confirms the diagnosis.

Treatment. Prophylactic—Keep the genitals clean.

Surgical. If small and few in number, they may be excised with a scissors and the area cauterized with a little glacial acetic acid.

If large, there is nothing that can compare with diathermy. Gas anaesthesia or gas-ether anaesthesia is administered. One pole of the current is attached to a large sponge electrode which is affixed to the patient's back. Crooks' metal may be similarly employed. The strength of the current should be enough to cook the tissue. Determine this previously by experimenting on a piece of butcher's meat. The wire or needle used is first applied to the mass of superficial excrescences and as this tissue is cauterized it is scraped away. Hold the wire right down in the mass: If it is held at a distance there is painful sparking. Removal of the growths above the skin does not, however, destroy the basic pathology. The fine applicating wire is inserted about ⅛ inch beneath the skin at the roots of the wart and all such skin area is cauterized. After-treatment consists in keeping a piece of gauze covered with vaseline over the area. All of the cauterized area sloughs away and new tissue grows up from below. Results are always excellent cosmetically. If you are removing a small amount of tissue, use a fine wire. Piano wire run through a piece of ureteral catheter makes an excellent applicator or a cambric needle inserted in the holder. The large aluminum needle supplied with diathermy machines are meant for large growths. If you use it inadvertently on a small growth you will produce tissue necrosis of some of the surrounding healthy tissue and healing takes considerable time.

Gonorrheal or Inguinal Adenitis-Bubo. A swelling of one or several of the inguinal lymph glands which may resolve or terminate in pus formation.

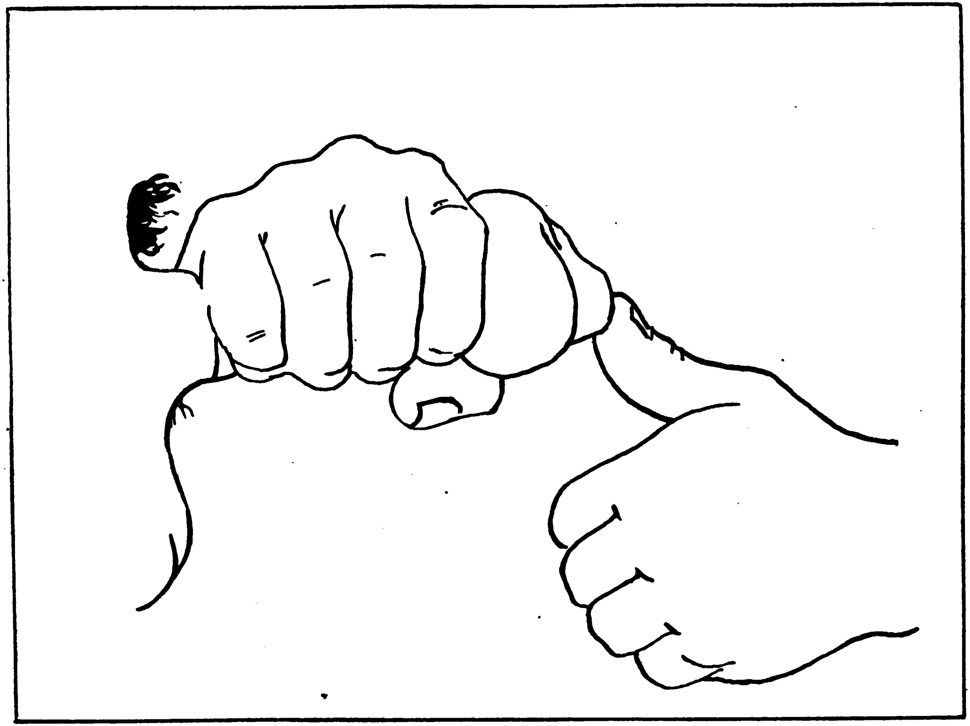
Treatment. The condition is a relatively rare one in gonorrhea and is due to a mixed infection. Heat is one of the best remedies for the affection. An electric pad may be used or far better a sixty watt therapeutic lamp, suspended so that it is about 1 inch above the skin. This produces a steady source of heat and is far better than hot applications which are usually too hot when applied and cool rapidly. If there is pus formation, wait until the fluctuation is marked, then open and drain.

Gonorrheal Opthalmia. An inflammation of the eye due to the gonococcus.

Etiology. In the newborn, the infection arises from the infectious vaginal secretion. In adults by the patient first touching pus from his penis and then touching his eye. Accidental infections also occur in physicians while operating. Fluid under pressure squirts up into the eye when a cyst ruptures and the surgeon delays taking the necessary prophylaxis. Accidental infection may arise from the use of contaminated towels.

Symptoms. The incubation period is from 12 hours to two days. The first or infiltrative stage is characterized by swelling, redness and tenseness of the lids. The conjunctiva of the lids and fornix is swollen and reddened and the lids are separated with difficulty. There is edema of the ocular conjunctiva called chemosis and secretion is present, which is serious at first and may contain a little blood. The eye is tender to touch and smarts with pain. Duration of this stage is two days.

The second stage of purulent discharge is characterized



Method of reducing a paraphimosis.

by a diminishing of the pain and swelling, but a profuse discharge continues to escape from between the lids. This stage lasts about two to three weeks.

In the convalescing stage the eye either returns to normal or a stage of papillary swelling ensues in which there is chronic inflammation of the lids. The palpebral and retrotarsal conjunctiva present a thickened, red, uneven, granular appearance and lasts several weeks. Complications are corneal ulcer and its sequelae.

Diagnosis is made on finding gonococci in the discharge and severity of the symptoms.

Treatment. Prophylactic—A Credé should be done at birth which consists of the instillation in each eye a 1% solution of silver nitrate. This is followed by copious washing with normal saline solution.

Adults must be cautioned to clean hands thoroughly after touching the penis. Physicians and nurses must take care to avoid material spurting into their eyes during an operation. If they should get some material into their eye, they should immediately wash the eye and instill a drop of 20% argyrol solution.

In those affected the noninfected eye is protected by a Buller's shield. The patient is made to lie on the affected side so that pus will not flow across the nose onto the good eye.

Treatment. At first, eye compresses continuously day and night. The eye is cleansed and the secretion washed away with a saturated solution of boric acid as often as material appears. This may be necessary every quarter or half hour. When the swelling is reduced as occurs in the latter stage the cold applications are replaced by hot applications which improve the circulation. When the cornea is involved instill a drop or two of ½% atropine sulphate solution. A drop of 25% argyrol is instilled in the eye during the purulent stage.

Cowperitis. An inflammation of one or both of Cowper's glands. The condition is rather infrequent and is due to some local irritation or traumatism in the posterior urethra with entrance of gonococci or other organisms through the ducts.

Symptoms. Pain in the perineal region. The glands may suppurate and then there is a painful indurative swelling at the site of the glands, which varies from pea to hazel nut in size. To palpate Cowper's glands, put the index finger in the rectum and with the thumb outside compress the intervening tissue anteriorly.

Treatment. Hot applications to the perineum continuously and hot Sitz baths. If suppuration is evident, incise and wash out abscess. This occurrence, however, is quite rare.

Folliculitis. An infection of the glands of Littre.

Etiology. Gonococci bury themselves within the glands of Littre because entrance into them is quite easy and when the organisms are once within the glands it is quite difficult to get them out.

Symptoms. Several or many of the follicles may be affected but the follicles that seem to be the favorites are just back of the head.

Palpating over a bougie or sound reveals the sensation of small pieces of shot beneath the skin. To palpate over the sound, place the thumb and forefinger against the under surface of the penis and press against the skin over the urethra. Move the hand quickly back and forth. The follicles may empty their contents into the urethra, connective tissue replacing the structure or they may go on to pus formation and at times rupture externally through the skin. Abscesses within the wall of the urethra are periurethral.

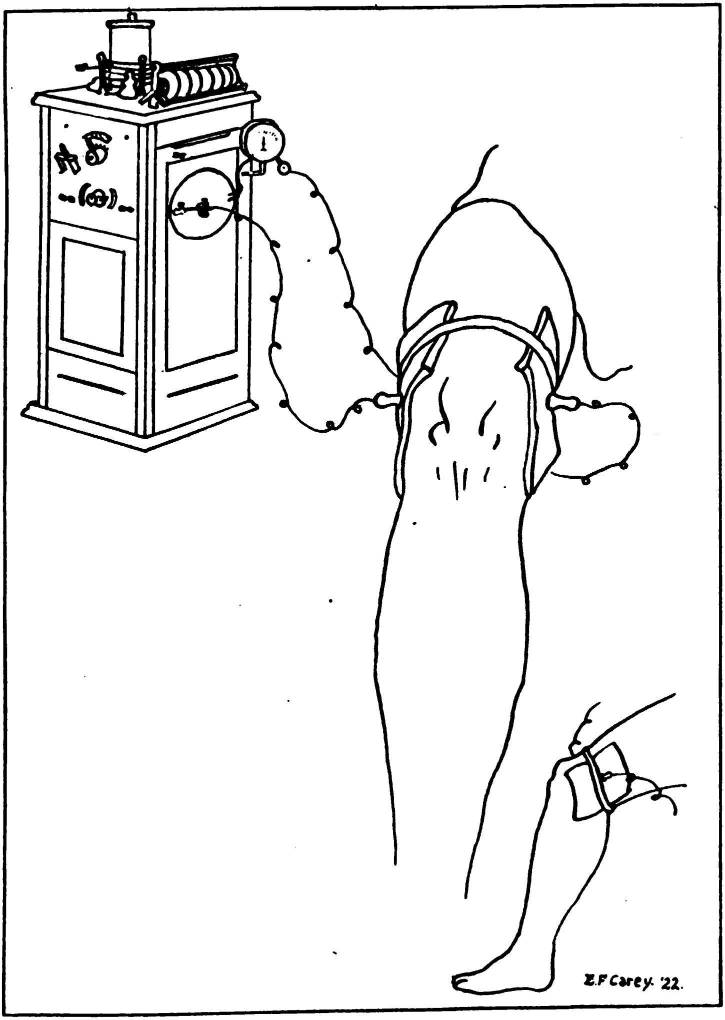
Treatment. Massage of the follicles over a bougie followed by a very mild silver nitrate wash of 1 to 4000 often suffices to rid these sacks of their contents. This process takes much time and patience, there being no effort made to actually express all of the contents but by bringing fresh blood to the parts, raise the tissue resistance and so push the gonococci out.

If pus formation takes place the follicle points either externally or internally, when with the aid of a fine opthalmic scalpel the abscess may be opened. If the follicle is small it may be destroyed with the high frequency current. This process of repair may take anywhere from a few weeks to a few months.

Gonorrheal Rheumatism. An inflammation of one or more joints due primarily to the gonococcus and its toxins.

The process may be confined to either the synovial membrane or bursa, but more often the several joint structures are involved. Often there is effusion (hydrarthrosis) of a serous or serofibrinous substance. Rarely is this purulent. Structural changes may take place in the bone (osteoarthritis) or the tendons may be involved (tendosynovitis).

Symptoms. Gonorrheal rheumatism is more common in men than in women and elects most frequently the knee, elbow, ankle, wrist or shoulder. The affection is usually monarticular with swelling. In severe cases several joints



Application of diathermy to knee in case of gonorrheal arthritis. Note though the wires are represented as twisted in actual use they are kept straight.

are involved. Tenderness is marked, on touching the skin over the joint and the pain on moving the part in a severe case is excruciating. Movement of affected joints is most always restricted. In some cases in which considerable fluid is present, there is but little pain. Constitutionally there is a small amount of fever and malaise.

Diagnosis. Acute inflammatory rheumatism is differentiated by the presence of severe constitutional symptoms, the polyarticular involvement, the frequent cardiac complications and the response to salicylates and local application.

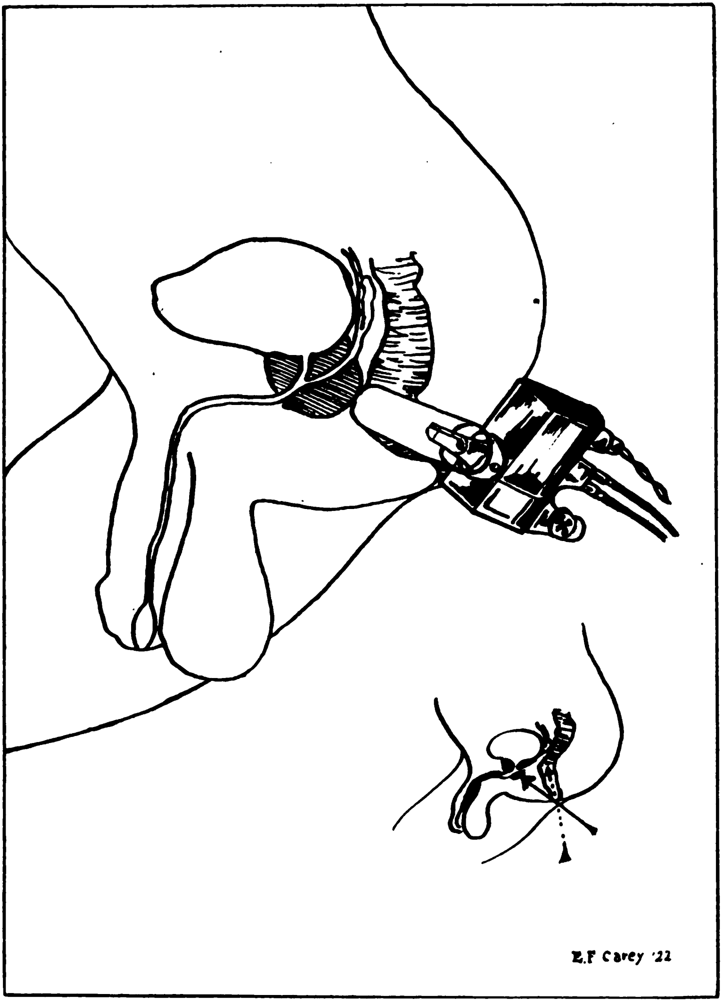
A positive diagnosis is always difficult when the symptoms are atyptical and discretion should be employed on the part of the physician not to definitely express himself when there is room for doubt.

Treatment. Nothing in the line of drugs, in or out of the pharmacopeia, can compare with diathermy and ultraviolet light. The affected joint is treated by putting two sponge electrodes on either side of the joint and strapping a rubber tube very lightly around them. Tinfoil may also be used and this must be held in position by means of gauze bandage. The advantage of the sponge electrode is that they may be quickly applied. Care must be taken to see that the electrodes are thoroughly soaked in warm or preferably hot water before applying. Commence the treatment by pulling out the short-circuiting rod to the first gap and allow the current to flow through for a few minutes. A slight amount of heat will be felt. If the condition is quite acute, you cannot use as much current as you can in a chronic case. If the patient states that there is considerable amount of warmth, then keep the amount of current constant and do not raise it at that treatment but wait until the next treatment. The duration of the first treatment should be about five minutes though individual judgment will enter into every case. At the next treatment, which will be the second day after the previous treatment, the short-circuiting rod is opened to the first gap and the current allowed to flow through for a few minutes when the rod is pulled out to open up the second gap. The current is allowed to flow through for five minutes, when the next gap is opened up. The amount of heat felt by the patient is the guide and only that amount of heat that is comfortable should be passed through. Do not attempt to give a great deal of treatment at first but work up gradually when it will be found that considerable amount of heat can be passed through a part. It will be found that after several of the spark gap intervals are opened, the amount of heat passed through will be comfortable, but after a few minutes of treatment the patient may state that the current is too warm. You will then gradually close the spark gap by pushing in the short-circuiting rod and thus gradually reduce the current to the amount that is tolerable. It must be remembered that the amount of heat increases in proportion to the time the current is flowing through, for after the tissues are heated up they will not stand as much as they did at first. In severe cases, treatments may be given three times a week at first until the acute symptoms subside. In chronic cases, treatments are given every day for the first week or two, as a general rule, so as to improve the general circulation of the part. Three treatments a week suffice for the average case. Nervous, anemic, sickly people are given very little treatment at first and the time for their treatment is about half or one-third of the regular treatment. The first treatment should be light because the purpose is to stimulate the structures but little. Always remember that overstimulation means depression. By giving mild treatments you will find that your patients will be greatly benefited and will always be at the office on time. A slight improvement is all that you want. Time of treatment varies from ten to twenty minutes, individual variation and the physician's judgment always regulating the time according to the individual case. Increase the current gradually, decrease the current gradually and your patients will bless you for it.

If tinfoil is used, two pieces two inches square should be used. If the sponge electrodes are used, a size of three by four or three by five may be employed. If the patient complains of burning it means that either the tinfoil is separated from the skin and a fine spark is being drawn or in the case of the sponge electrode that the electrode is dry.

If there was immobilization before the treatment began, it is best after each treatment to produce a very slight amount of motion to sort of test the motility of the joint, and help break up any adhesions. Treament cannot be definitely outlined, for the physician in some cases must continue with very small amounts of current, while in other cases he may proceed quite frankly. An experienced worker can impart knowledge, but wisdom only comes with experience. In some cases the patient only gets five minutes' treatment the first day, gradually increasing to ten minutes. Regulate the amount of current and the duration by the effect produced on the patient.

Ultra-violet light should be employed in conjunction with



Application of ultra-violet radiation to the prostate through quartz prostatic applicator. Thumbnail sketch in lower right hand corner indicates proper direction of applicator. This is shown by means of the heavy line arrow. The incorrect direction is indicated by dotted arrow.

diathermy. Its value is not only in helping the body to rid itself of one toxin but to prevent other parts of the body from becoming involved. (For technic of general body radiation see page 116.)

Prostatitis. Definition—An inflammation of the prostate gland.

Etiology. The predisposing causes are such factors which lower the gland resistence. These are ungratified sexual excitement which causes a chronic irritation within the gland with retention of secretion. Masturbation in excess lowers the general vitality as does sexual excess. Traumatism either from injudicious instrumentation or instillations that are too strong or untimely in application, prostatic massage with brutal pressure against the prostate, prostatic calculi and severe constipation, alcoholic excesses and irritating urine are contributory factors.

The exciting cause is the gonococcus, but it may be mixed infection or due to either the staphylococcus, streptococcus or colon bacillus.

Pathology. The follicular portion may be attacked, that is, the tubular and intertubular substance is inflamed or the parenchymia or glandular substance is inflamed. The process may go on to abscess formation. These are usually small and multiply at first but later converge into a large single affair.

Microscopic examination of the secretion obtained by massage reveal abundant pus cells, bacteria, lecithin bodies, and a few spermatozoa.

Symptoms of Acute Prostatitis. A feeling of weight and soreness in the rectum is constantly present and is exaggerated when the patient sits down. Usually he sits on the edge of a chair to avoid pressure against the rectum. The pain is increased when the patient has a bowel passage, and urination is increased in frequency and is painful. Chills and fever are present if the infection is at all severe. On rectal examination the gland is felt to be tender, enlarged and warm. Occasionally there is retention of urine.

Course. Complete resolution may take place in which all the products of inflammation are absorbed or an abscess may form which usually evacuates itself by rupture into the bladder, rectum, perineum, or ischio-rectal fossa. Before the rupture of a prostatic abscess, the symptoms are markedly aggravated. After rupture these features abate rapidly or the inflammation may persist and become chronic.

Diagnosis. Differentiation must be made from cystitis by urinary, cystoscopic and rectal examination. Seminal vesiculitis may be associated but usually there is a chocolate-colored discharge, the semen is bloody color, pain is present in the inguinal region. A urethral discharge usually follows intercourse due to reinfection of the urethra.

Treatment of Acute Prostatitis. However distressing the condition, the average case of prostatitis is ambulatory. For a day or two the patient may be confined to bed because of pain and fever, but he soon gets up and tries to resume his activities. For the acute pain and miserable feeling, and there is no denying they are miserable, a suppository of the following composition quickly puts the patient at ease:

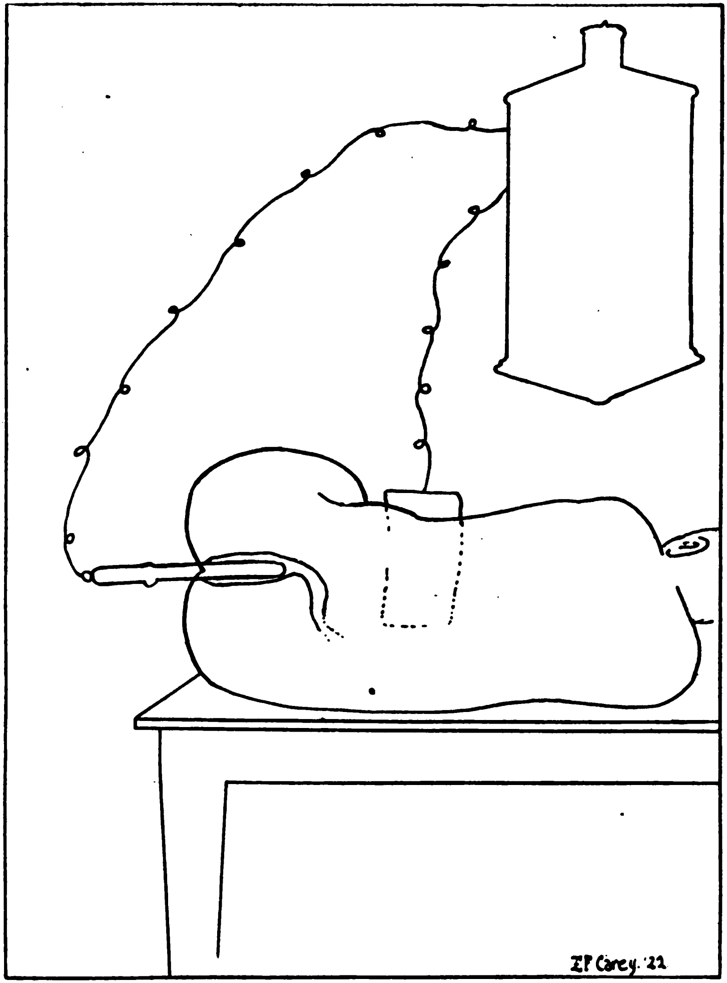
Extract of Opium..............	¼ grain
Extract of Belladonna..........	⅛ grain
Cocoa Butter Q.S.	

Make twelve such suppositories and insert one in the rectum every three hours until relieved. If the pain is exceedingly severe and the individual is strong, ½ grain of the extract of opium may be used.

Hot Sitz baths, two or three times daily, are excellent for those who can lay up. A warm enema morning and night should be taken to keep the bowels open.

Though the above pallative measures will materially assist in making the patient comfortable, they do little toward ridding the gland of any retained infectious material. Nothing is so helpful as diathermy correctly applied to the prostate. I have taken glands that were extremely tender and enlarged and have by means of careful diathermy, ultra-violet light and massage, returned the gland to normal size. These bulging prostates are certainly inviting from a surgical point of view to open them, but if we can produce enough heat through all parts of the gland, we can induce drainage without recourse to surgery.

Technic for Diathermy of the Prostate. This may be accomplished by having the patient lie on his side with his back to the operator. It is not necessary to have the patient undress. A large sponge electrode is thoroughly moistened with warm water and attached to one pole of the diathermy machine and the other is attached to a non-vacuum rectal electrode which is inserted by applying a small amount of K. Y. jelly to the tip. The current is gradually turned on until a sensation of warmth is felt through the gland. This is maintained for five or ten minutes. Gradually increase the current on the following treatments always bearing in mind that we must follow the sensations of the patient, and if the current is comfort-



Diathermy of prostate showing position of patient and electrode. Note one pole attached to electrode within rectum, the other is attached to pad placed on patient's abdomen, indicated by dotted line. Note though the wires are represented twisted in actual use they are kept straight.

able, maintain it, otherwise reduce it. Do not apply extreme heat, for it will do harm. Treatments at all times must be individually regulated, for each patient is a separate law unto himself.

The diathermy is indicated when the infiltration through the gland is quite intense. After the diathermy treatment, ultra-violet light is administered per rectum. Though it may look extremely easy to apply ultra-violet light, yet it is a problem in technic mastered only with experience. Beginners are bound to make mistakes and by these he must profit. The straight hollow quartz applicator or the Plank proctoscope may be employed. The introduction of instruments must be made painlessly and so the problem arises, how to use a lubricant that will not hinder the light rays. Though all textbooks on light state that ultra-violet light can only pass through air, quartz, and water; yet, by actual experiments this is not true. Ultra-violet light can and will pass through a thin film of K. Y. lubricating jelly to the extent of 50% of the total value. We put a slight dab of jelly on the tip of the quartz applicator and gently insert it. The lamp being ready, a localizer is attached and this is inserted within the quartz tube. If the light were allowed to shine in the direction the tube is in, it would be found to play above the prostate. Now gently rotate the lamp and tube in the horizontal axis of the body anteriorly so that the tube is touching the prostate. To do this, the tube must be rotated through an angle of about 35°. Now the operator asks the patient if the part against which he is now making pressure is sensitive. This can be readily determined. The major part of the treatment should be focused against this area. Begin with one minute treatment with meter reading 50 volts and increase steadily one minute each treatment, until ten minutes is given. In acute cases treatment should be given every day and as soon as improvement begins reduce the treatments to three times a week. Though diathermy may be used with advantage in conjunction with ultra-violet light therapy, its real indication is in those cases where response to ultra-violet treatment is apt to be slow, as for example, in cases with abundant pus formation or very chronic cases. Gentle massage should follow each treatment. Massage as usually performed is criminal, in that the operator is so anxious to give the prostate a good massage that he injures the delicate gland structure by mascerating it and so increases the infection by lowering the tissue resistance. To correctly massage a gland the index finger is inserted into the rectum while the patient lies on his side and has his knees well flexed on the abdomen. Run the hand once around the border of the gland to sort of outline it and then run the finger once or twice across the rectal surface of the gland with slight pressure. This tends to push any infection toward the urethra which is the natural emptying place. When pus is localized, then we can often, by a firm, steady, but gentle, pressure, push any pus into the urethra. Begin very gently and gradually increase the force. Examine the meatus and if pus is exuding, then we know the massage is of value. If it does not, desist all massage, for this means that though the gland be swollen the pus is still saculated and has not broken into the urethra. Though only a small number of prostates go into pus formation, I have gone into considerable detail because if an operation can be avoided it should be. Post operative wounds often do not heal as readily as we would want them to.

When there is a considerable amount of pus, it must be evacuated through the perineum. Make an inverted "V" shaped incision. Do blunt dissection, keeping away from the central tendon of the perineum. Drain both lobes by inserting a small rubber tube which is held in place by a stitch of chromic gut. The skin is closed and the prostate is allowed to drain until all evidence of pus has disappeared.

Chronic Prostatitis. A chronic inflamation of the prostate gland due to previous attacks of acute prostatitis, excessive masturbation or intercourse in which the male withdraws just prior to ejaculation.

Symptoms. On rectal examination the gland is usually found to be enlarged and hard, though it may be soft in spots. There is usually pain in the perineal region after a bowel passage; there may be a discharge or secretion present at the meatus. This is due to the pressure of hard feces against the gland. Urination is usually increased and impotence is present, either partial or complete. Premature ejaculation usually precedes this. Occasionally there is intense sexual desire and intercourse is participated in excessively. The symptoms of sexual neurasthenia are usually present. Examination of the expressed secretion reveals pus cells and organisms.

Treatment. Ultra-violet light therapy as described under subacute prostatitis and in addition thereto, instillations of ¼% silver nitrate in the prostatic urethra. Massage in chronic cases is best elicited by means of the sinusoidal current using the prostatic electrode. Massage the gland by slowly revolving the applicator so that it touches all parts of the gland. Hot Sitz baths once a day are advised.

Seminal Vesiculitis. Definition—An inflammation of one or both seminal vesicles and due to the same causes as prostatitis.

Symptoms. The symptoms in the acute stage are often quite similar to prostatitis and in addition thereto, bloody and purulent seminal emissions. On rectal palpation, the enlargement is felt above the prostate which is quite painful and produces a sickening feeling. Often there is a referred pain to the inguinal region just above the pubes. A urethral discharge may be present which is blood stained.

Treatment. If the symptoms are quite acute then rest in bed, with an electric pad to the perineum and hot Sitz baths do good. Diathermy through the vesicles as described on page 88 followed by sinusoidal massage when the sub-acute stage ensues, aids in ridding the vesicles of infection.

Chronic Seminal Vesiculitis

Symptoms. Sexual power usually decreased and the seminal emissions are dark red to chocolate in color. Sometimes there is a slight bloody discharge after urination or bowel passage. These patients often become hypochondriacal and lose their mental stamnia. The pain may stimulate ureteral colic due to pressure of the vesicles against the ureters.

Diagnosis. Microscopic examination of the discharge reveals spermatozoa pus cells, and epithelial cells. On rectal examination the vesicles are found to be hard and firm, if fibrous changes have taken place. They are soft and bulging if the ejaculatory duct is blocked. Sometimes there is a discharge of seminal fluid when the patient defecates, followed by a feeling of weakness. Later there is an unconscious loss of seminal fluid.

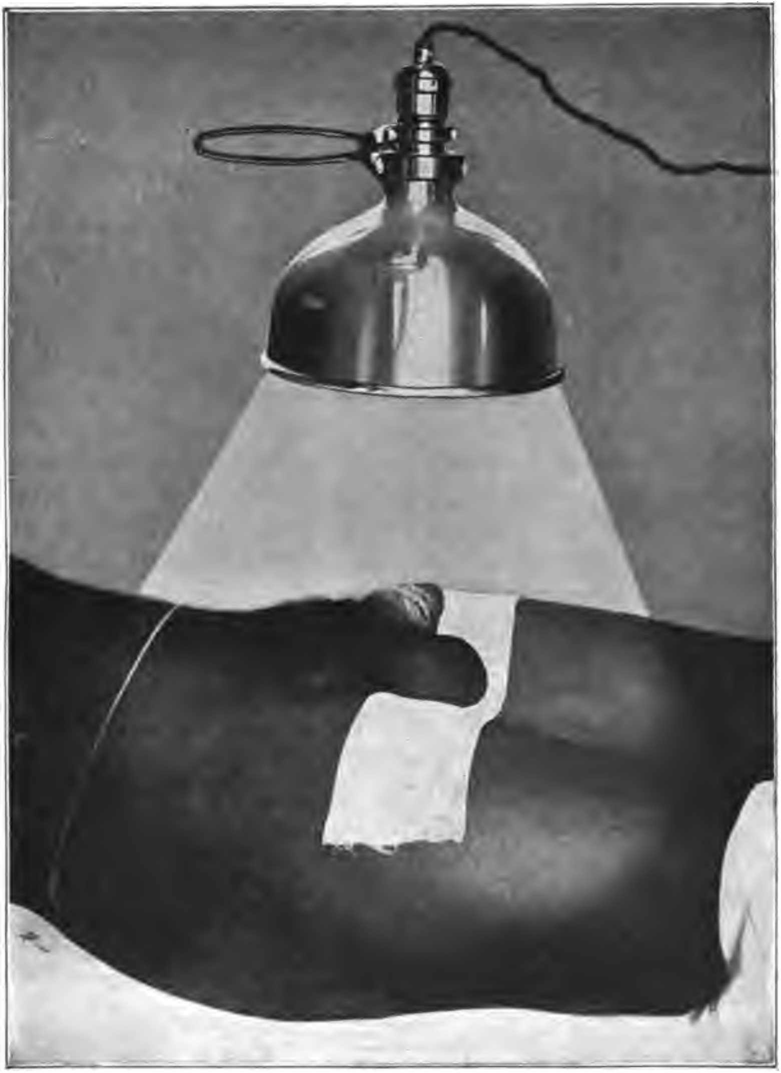
Treatment. Similar to chronic prostatis which includes diathermy, ultra-violet light with proper quartz applicator, massage and hot Sitz baths. Oftimes the affection is quite resistant, in which case success has been reported by some with the Belfield operation. (J. A. M. A., Dec. 25th, 1909.)

Gonorrheal Epididymitis. Definition—An inflammation of the epididymis due to the gonococcus.

Etiology. Predisposing causes are gonorrhea of the posterior urethra, seminal vesicles and prostate. Exciting causes are injuries to the testicle; physical strain due to heavy lifting, injections of strong solutions into the posterior urethra, irrigation of the posterior urethra in the acute stage, instrumentation and sexual intercourse by opening up the ejaculatory ducts.

Pathology. The gonococci usually enter from the vas bringing the infection from the posterior urethra and seminal vesicles. There is exudation of pus cells and serum in the epididymis which causes tension. Resolution takes place by absorption and connective tissue formation or there is pus formation.

Symptoms. Pain in the epididymis is slight at first and increases as the epididymis enlarges. When one touches the epididymis, it is found to be extremely tender, but touching the testicles does not elicit pain. There is difficulty in walking and the patient usually walks with the leg on the affected side stiffened. Tenderness is present along



Method of applying radiant heat to testes in epididymitis. Note how traction is relieved by adhesive tape strapped across thighs.

the spermatic cord. The epididymis is swollen and the scrotum is edematous, and any pre-existing urethral discharge ceases.

Treatment. Have the patient wear a suspensory from the start and avoid any strain either sexual or physical. Avoid all irrigation and injection of any strong solutions. Instrumentation within the penis in the acute stage is absolutely contraindicated.

Active treatment consists in putting the patient to bed and stopping all local treatment—suspend the testicles by a broad strip of adhesive extending from hip to hip on which the testicles are placed. If the case is mild a well fitting suspensory should be worn. For hot applications nothing is superior to the radiant light from a small heat lamp which is suspended 1 inch above the scrotum by a string or a stand. A sixty watt bulb is used and the distance of the lamp to the scrotum is varied according to the amount of heat desired. The lamp may be left on all night if necessary, of course, due care being taken not to burn the patient. If it be desired to apply moisture soak a small pad of gauze in a saturated solution of magnesium sulphate. It is not difficult to see the advantages of this method over the usual hot application. Towels soaked in hot water are heavy and their weight against the testicles hurt. Extreme care must be taken not to burn the patient. In a few minutes the towels are cold and the nurse must change them. All these disadvantages are obviated when employing the heat lamp. For pain, give a rectal suppository. (See page 87 for formula.) Often, after patient is put to rest and the heat applied, there is little need for an anodyne.

When the patient reports for office treatment a series of systemic ultra-violet light treatments should be given.

Operative Treatment. When there is evidence of definite pus formation, resort may be made to Hagner's operation.

Technic—The patient is prepared for a general anesthesia and the scrotum and suprapubic region are shaved. The affected testis is then grasped firmly in one hand and the skin of the scrotum made tense over the lower portion which is the site of incision. A longitudinal skin incision three cm. long is made on the anterior wall of the scrotum and near the lower border of the testis. After this the dissection is blunt. After the tunica vaginalis is opened, either pus exudes or firm fibrinous layers of a plastic lymph material are seen. These layers of fibrin are laid down during the course of the inflammation and are best separated by finger dissection. Warm towels are now placed around the incision and the testis and epididymis are delivered. Any fluid is evacuated and any pus foci seen are punctured and washed out with 1 to 1000 bichloride of mercury solution. Examine the epididymis and make a number of fine punctures into its tense capsule with the point of a fine knife. This proceedure relieves the tension and produces a rapid abatement of the symptoms. Whether pus is obtained or not, the results obtained are most gratifying. A gutta percha drain is inserted up to the testis and passes through the skin at the lower angle of the incision. The tunica vaginalis is lightly closed by a running catgut suture. The skin is closed with interrupted linen sutures. The testicles are supported on an adhesive strip. After the patient recovers from the ether, hot wet gauze applications are applied. These may be kept constantly warm by means of the modified therapeutic lamp. The drain is shortened on succeeding days, but the wound should be kept open as long as material is discharging. Following the operation, the testis swells due to the edema produced by trauma, but this passes off. The hot moist dressings often cause the skin suture to come out, in which case the margins of the incision are held by adhesive tape. If an open granulating surface is left, it may be closed by the application of ultra-violet light or the following ointment may be used:

℞

Silver Nitrate	1 g.
Balsam of Peru	10 g.
Vaselin qs. ad	100 g.

The patient should wear a well fitting suspensory for several months after the operation.

Gonorrheal Orchitis. An inflammation of the testis due to the gonococcus and its toxins. It is quite rare.

Pathology. An effusion is produced which puts tension on the tunica albuginea. If due to the gonococcus the affection is associated with an epididymitis.

Symptoms. Similar to epididymitis—the testicle being sensitive to palpation as well as the epididymis.

Treatment. The same as epididymitis.

Gonorrhea of the Heart. Gonorrhea affects the heart when the organisms make entrance into the blood stream. The endocardium, myocardium or pericardium may be affected.

Stricture. Definition—A narrowing of the urethra due to scar tissue caused by a considerable loss of epithelium.

The narrowing may be congenital or due to hyperirritable nerve endings causing a spasmodic stricture. Spasmodic stricture is not a true stricture but is a clamping down of the cut-off muscle that prevents urine from escaping into the urethra and also prevents the ready passage of a bougie into the bladder.

Etiology. Spasmodic stricture may be caused by psychical condition such as shame, fear and excitement. Many people cannot urinate in presence of others. This is especially marked when a doctor asks a patient for a sample of his urine. If, however, the water faucet is turned on and the physician leaves the room, on returning, in a few minutes, he will have found his specimen of urine ready. Inflammations in the posterior urethra cause it to become more sensitive to nerve stimuli and such conditions such as posterior urethritis, urethro-cystitis, strongly acid urine and coitus interruptus will predispose to the condition. Stone in the bladder and operations about the anus are contributory causes.

Treatment. Hot applications to the perineum or hot Sitz baths, having the patient urinate while in the tub of water. This failing, pass a silk and linen catheter medium size. Insert the catheter very slowly and carefully using even pressure.

Organic Stricture. Definition—A formation of fibrous tissue in the urethra which contracts and narrows the lumen.

Etiology. Congenital cases are rare. They are due to arrested embryonic anlage or maldeveloped embryonic foregrowths. The anlage is the embryonic structure from which the various organs are developed.

Symptoms. The symptoms depend upon the position and size of the stricture. If large there are no symptoms; if small there is frequency of urination, nocturnal incontinence, retention of urine or dribbling of urine after active urination has ceased. These symptoms may be mild or exaggerated.

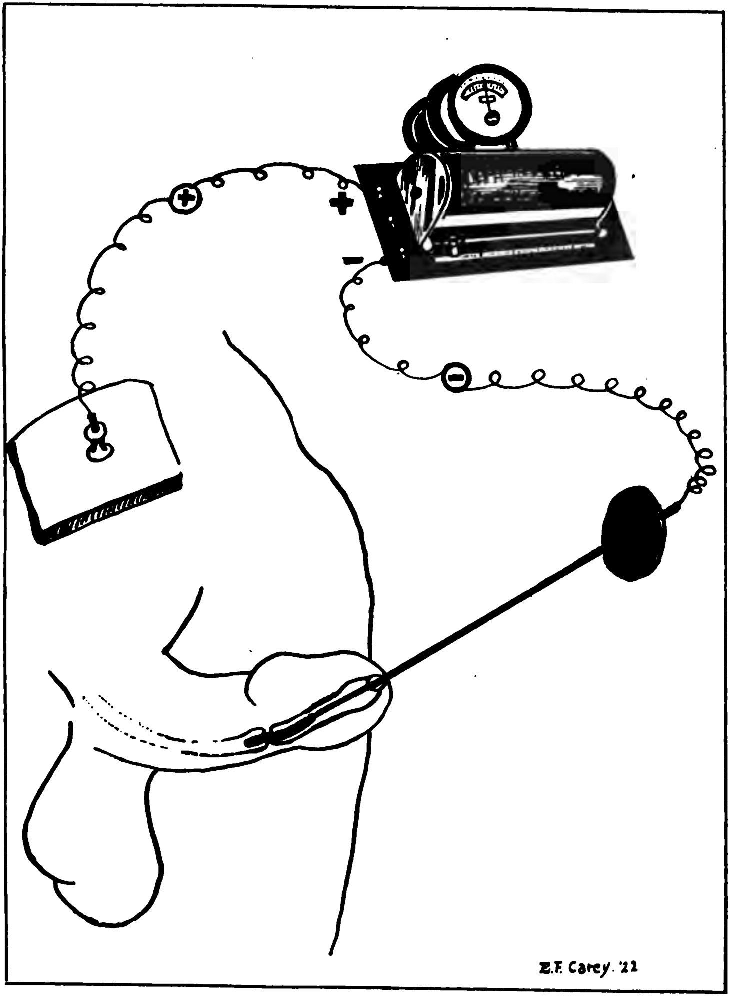
Acquired Organic Stricture. Usually due to gonococcal inflammation of the urethra; pus organisms assisting in the process. Trauma due to the rough and injudicious use of instruments in the urethra and the injection of strong chemicals into the urethra are also frequent causes. Introduction of foreign substances into the urethra, for the purpose of masturbation.

Pathology. Inflammation at the places of injury with round cell infiltration. This type of stricture is called a soft stricture and may disappear by absorption or turn into a hard stricture which is characterized by granulation tissue at first followed by dense connection tissue which later contracts. A small amount of discharge usually accompanies strictures. This discharge or secretion consists of leukocytes and mucoid secretion.

Types of Strictures. 1. Linear or bandlike stricture. 2. Annular or elongated stricture. 3. Tortuous or twisted stricture.

Strictures may occur at any point in the urethra but the most frequent site is the bulbo-membranous junction.

Strictures are spoken of as being large or small. A large stricture is one that will permit the passage of a 15 F. sound or larger. A small stricture is one that only sounds below 15 French can pass. The normal size of the average adult urethra is from 25 to 28 F. The normal points of



Negative galvanism in stricture of the urethra. Positive pole to patient's abdomen.

narrowing are at the meatus and the bulbo-membranous junction.

Symptoms. A small amount of discharge is present, usually appearing in the morning and called the "Morning drop." Changes in the size and form of the urinary stream are seen, the stream being twisted, small or double. There is increased frequency of urination, accompanied by a smarting sensation. At first the force of the stream is increased due to hyperthropy of the bladder. Later there is a decrease in the force of the stream and some urine dribbles away.

Acute retention or urine may be brought on by exposure to cold, alcoholic excesses or instrumentation. Examination of the urine shows shreds due to the exfoliation of urethral mucosa and filaments, due to discharge of inspissated material from the urethral glands. The morning urine is often turbid or slightly cloudy, but later in the day the urine is clear.

Diagnosis. History of the distorted urinary stream, difficulty in starting the stream, frequency of micturation, dribbling of urine after the act of urination is complete. A thin mucoid discharge is present in the morning or may continue during the day (Gleet). Diminished sexual power makes itself known when the stricture is quite pronounced and by retention of urine, it being necessary for the patient to wait some time before being able to start the stream. By passing a silk and linen bougie or steel sound, the diagnosis is made. The urethroscope may be employed though usually it is not essential. Sometimes the symptoms of stricture are so mild that the physician is led off his guard. In testing, use silk and linen bougie and do not call the slight constriction felt at the bulbo-membranous junction a stricture.

Complications. Many of the complications of stricture are due to improper methods in treating them. False passages in the urethra, periurethral infiltrations and chronic urethritis are often due to rough passage of sounds. Where the stricture is untreated they grow progressively worse, and by back pressure produce a chronic cystitis, chronic urethritis, nephritis, dilation of the ureter and pelvis. When the stricture is so dense and narrow, that operative intervention is necessary, an urinary extravasation may occur in the tissues of the penis and perineum. Painful ejaculation is due to mechanical hinderance of the seminal fluid.

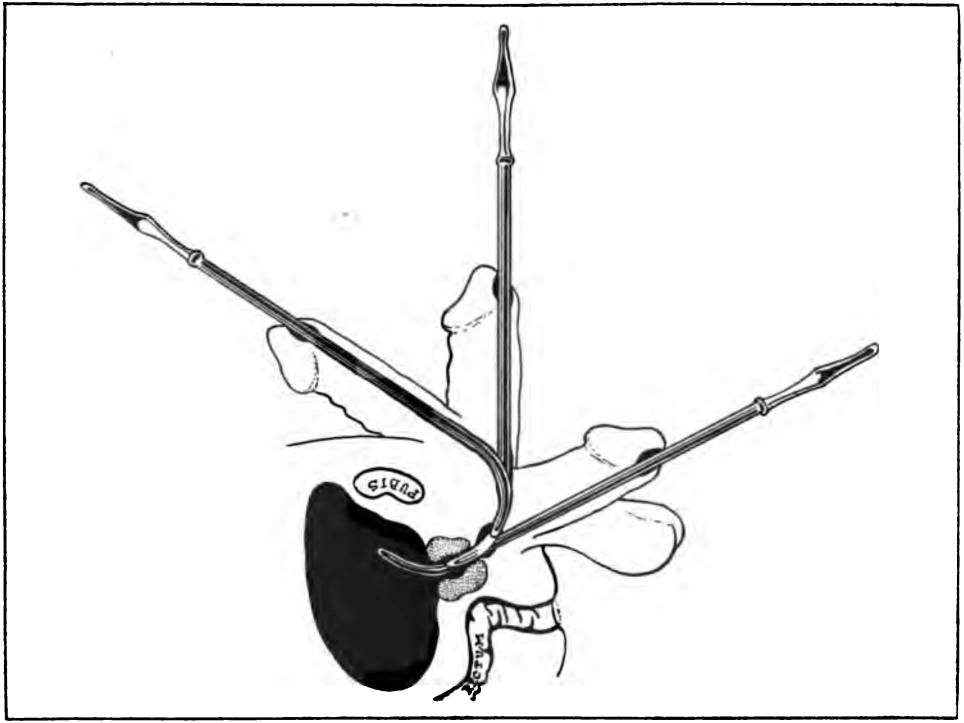
Treatment. Real patience is a virtue and will mean success in the successful treatment. It took a considerable length of time for the scar tissue to form and the urethra must be returned to normalcy slowly. It is easy enough to say "cut the stricture," but when you do, your troubles begin. Always consider you have scar tissue to deal with and when this is cut new connective tissue will form in its place. Slow, gradual dilation stretches the scar tissue which indeed is the result we want.

Soft strictures are not real strictures for they consist only of a round cell infiltration and by pressure with bougies we cause the inflammatory elements to absorb. Whether the stricture be hard, of large or small calibre, always begin with a bougie to determine the position and number of strictures. A definite resistance is felt at each of these sites, often the bougie meets with considerable resistance. If the bougie cannot be passed, use a steel sound but do not employ one under 15 F. as they are likely to do damage by making a false passage.

Technic for Passing a Steel Sound. Wash off the meatus with soap and water. If the patient is extremely sensitive anaesthetize the urethra with 2% novocaine by injecting 2 drachms with a hand syringe and have the patient grasp the meatus for two minutes.

Put a small dab of K. Y. lubricating jelly at the meatus. The operator stands on the right side of the patient and holds the handle of the sound in his right hand. The left hand grasps the glans penis, at the same time holding the meatus apart with the thumb and first finger. The tip of the sound is then passed into the urethra. The penis is next grasped back of the corona of the glans and the penis is drawn over the sound which is inclined towards the abdomen. With the left hand holding the glans and the right hand holding the handle of the sound the penis is brought to the perpendicular position with a small amount of tension on the penis. The handle is allowed to decline and with a small amount of downward pressure on the handle the sound glides into the bladder. NEVER USE ANY FORCE. IF THERE IS MUCH PAIN DISCONTINUE THE ATTEMPT. BE GENTLE IN THE USE OF THE SOUND AT ALL TIMES. When the sound is brought to the perpendicular position it sometimes catches at the triangular ligament. With the index finger a small amount of pressure on the perineum at the lower attachment of the scrotum usually assists in gliding the sounds over any obstruction.

After a gonorrhea is cured, wait a month before passing a bougie to determine if there is any obstruction. As a



Passing a steel sound into the urethra showing three positions of sound and penis.

general rule do not sound a urethra more than twice a week. If there is much reaction following the sounding then only once a week or longer intervals. If blood appears after passing a sound, it means some tearing. Give the urethra time to heal.

Treatment of Small Strictures. Pass several whalebone filiforms and by careful and patient manipulation of these get one of the filiforms to pass the stricture. Thread this filiform through the eye of a Otis urethrotome and pass the urethrotome using the filiform as a guide. After the stricture is passed, open the blades by twisting the wheel slowly. Do a small amount of dilation about once every five days.

Removal of the scar tissue or the softening of it, can be best accomplished with negative galvanism. Put a large water soaked pad on the patient's abdomen and attach it to the positive pole of a galvanic battery. Pass a urethral electrode through the stricture and apply one-half to one milliamperes for five minutes and withdraw the electrode. The time of treatment may be increased. Increase the current but little depending on the density of the stricture. Do not attempt to dissolve the scar tissue in one procedure but use time and discretion. Let good judgment always be the guide.

LECTURE VII

Gonorrhea of the Female

Non-Specific Urethritis. Definition—An inflammation of the urethra not due to the gonococcus.

Bacterial Urethritis. An inflammation of the urethra due either to B. Coli, staphylococcus, streptococcus, or B. Catarrhalis. The condition is induced by intercourse with women suffering from leukorrhea, cervical abscess or erosion, or those who are menstruating. Introduction of dirty sounds and bougies and a long prepuce which does not allow the escape of decadent discharge.

Symptoms. Characteristic of non-specific urethritis is the mildness of the symptoms, absence of intense burning or frequency of urination and the rapid response to treatment. The microscope identifies the exciting organism. Non-specific urethritis may begin at any point in the urethra, whereas, specific urethritis always begins at the meatus. There are some cases of bacterial urethritis that are very resistant to treatment.

Treatment. One to 8000 Potassium permanganate solution by injection gradually increasing the strength up to 1 to 3000 if necessary.

Chancroidal Urethritis. An inflammation of the urethra due to Ducrey's bacillus.

Symptoms. Pain is usually confined to a localized area in the anterior urethra just back of the meatus. Discharge usually mixed with blood and no gonococci are found on microscopic examination. Chancroids on the glans are usually associated.

Treatment. Mercury oxycyanide injections 1 to 10,000.

Syphilitic Urethritis. An inflammation of the urethra due to the presence of a chancre within the urethra.

Symptoms. An indurated mass is palpated in the anterior urethra. There is slight or no pain. Uniform enlargement of inguinal lymph glands. A slight amount of discharge containing a few blood corpuscles and pus cells. The mass disappears when treatment with mercury and salvarsan is begun.

Chemical Urethritis. An inflammation of the urethra due to the injection of strong chemical solutions, such as strong silver nitrate.

Treatment. Stop the injections. Inject 1 to 2 drachms of 1% thymol iodide in olive oil into the urethra and have the patient retain it for 3 to 4 minutes. At first do this three times a week, later twice a week and finally taper off with one treatment a week. Now give the urethra a rest.

Neoplastic Urethritis. An inflammation of the urethra due to small tumors in the urethra such as fine multiple papilloma.

Treatment. Diathermy with a fine electric wire through the urethroscope.

Traumatic Urethritis. An inflammation of the urethra brought about by continued use of sounds or catheters.

Toxic Urethritis. Due to the ingestion of highly irritating substance such as tincture of cantharides.

GONORRHEA IN THE FEMALE

Definition. An inflammation of the genital organs and the urethra of the female, due to the gonococcus.

Etiology. Those conditions which lower the tissue resistance predispose to infection. Most important are uncleanliness due to lack of douching. An abortion or a pregnancy will light up a dormant infection.

The exciting cause is the gonococcus. The usual incubation period being from four to six days.

Pathology. There may be inflammation of one or several parts of the urogenital tract. The Bartholin glands (vulvovaginal glands) are usually involved. The urethra, vulva (vulvitis), vagina (vaginitis), cervix (cervicitis), endometrium (endometritis), Fallopian tubes (salpingitis), bladder (cystitis) may be involved. Skene's glands which are two small glands on either side of the urethra may be inflamed. The discharge consists of epithelial cells, pus cells, serum and bacteria.

Symptoms. Burning on urination is one of the first and most constant signs of the disease. It should be remembered that gonorrhea in the female does not make itself known as easily nor as readily, as it does in the male. A woman with a leukorrhea will probably not discover any difference in the character of the discharge nor is she as apt to notice slight inflammatory changes as is one who is accustomed to a minor inflammation of these parts. Usually there is also a frequency of urination which means the urethra is involved and indeed this is a frequent point of attack. Moderate increase of temperature to 100 or 101° F. is recorded. A foul yellowish discharge is soon seen and the vagina is sensitive to touch. Bartholin's glands are often enlarged and on stripping the urethra, a fine discharge can often be obtained. Tenderness of the abdomen in the region of the fallopian tubes is noticed on gentle palpation.

Diagnosis. Do not question husband or wife in such a manner as to cause either to suspect the disease contracted is of venereal origin. At least, do not give this inference to the wife. The word "strain" or "a cold on the bladder" are good lay substitutes. In the first place mistakes are often made and unpardonable domestic damage is the result; secondly it does not improve the situation to impress upon a wife the fact that the disease from which she is suffering is due to indiscretions of her husband. Women, in reality, do not like to hear ill spoken of their husband. The physician's aim and purpose is to remedy the condition and return her to normal as soon as possible.

A history of exposure in unmarried girls or a history of an old infection in the husbands of married women is usually elicited. Some women have gonorrhea and suffer with it so lightly that they hardly know they have it. Others are so sick with it that they nearly die. The signs are enlarged Bartholin glands, inflammation of the urethra, oozing of pus from the cervix, presence of gonococci in the discharge. Often the gonococci may be obtained, by stripping the urethra and collecting the secretion on a swab and smearing this over a glass slide. Genital infections due to other organisms must be differentiated. In these, the symptoms are as a general rule less severe, there is no suspicious history, the microscope reveals no gonococci and the course is favorable and mild. Material obtained from the urethra is the most suitable for satisfactory microscopic examination. Pus obtained from the cervix or vagina is usually loaded with other organisms which make differentiation difficult.

Treatment. General Rules—If the symptoms are severe the patient must rest in bed with an electric pad to the suprapubic region or better yet, a large 1000 watt incandescent lamp suspended over her abdomen. The heat is a pleasant anodyne and does much to relieve the pain and tension within the abdomen.

Keep the bowels open and for burning on urination give the same prescription as advised for similar condition in the male (see page 52). For nervousness give elixir sodium bromide; two teaspoonfuls at bed time.

The average case of gonorrhea in women, however, is ambulatory and the office treatment is the principal one. Nothing compares with ultra-violet radiation in the treatment of gonorrhea for it relieves the infection by killing the host, raising the defensive mechanism of the body and accomplishes this without injury to the delicate mucosa. Most important is the rarity of complications for it does not traumatize the adjacent organs. Many cases of salpingitis are due to rough handling of the patient during the acute stage.

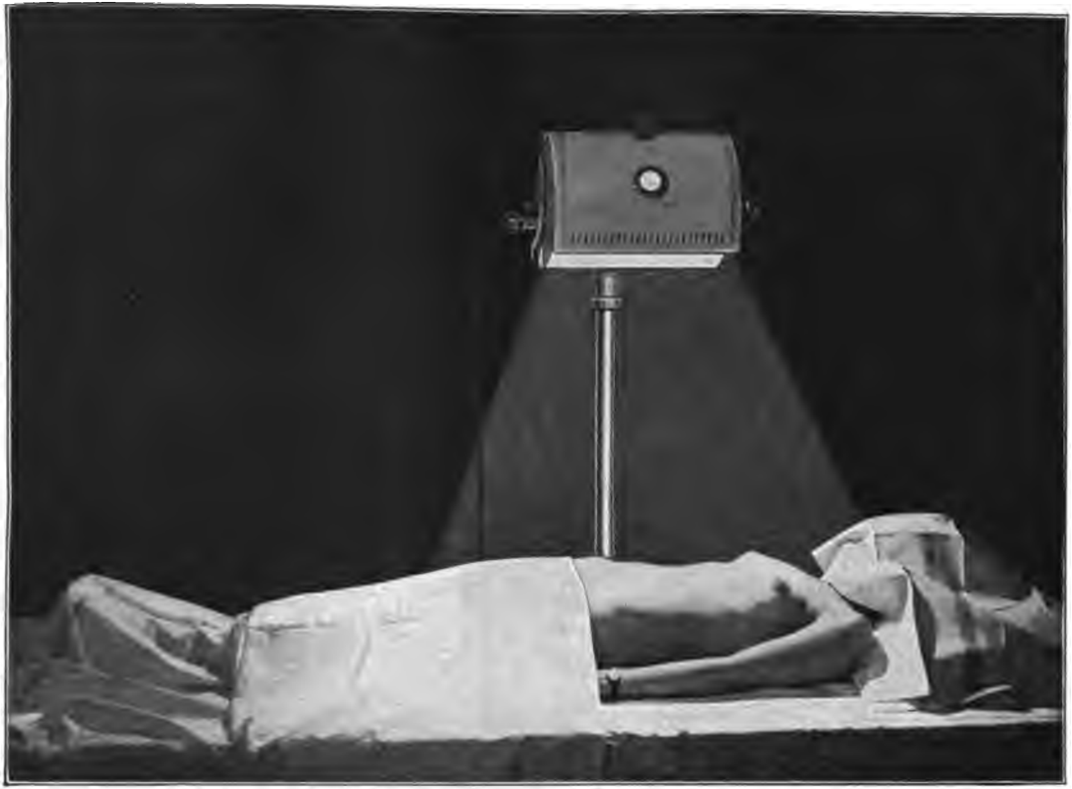
Ultra-violet radiation is commenced as soon as the acute symptoms have passed. A bivalve speculum is inserted into the vagina and any exuding pus is wiped away from the cervix and from off the walls of the vagina. A two-minute treatment is given the first day. A body exposure of one minute at 40 inches is also given the first day. Treatments are gradually increased until the general body treatment have reached 10 minutes when the lamp distance is decreased one to three inches and the treatment is held at 10 minutes. The local treatment with the water cooled lamp is gradually increased to ten minutes and held there for subsequent treatment. The general body treatments may be continued until the lamp reaches a distance of twenty-four inches from the body. If, however, you encounter a susceptible individual, then allow a few days' interval to intervene and do not increase the treatment as you would do ordinarily but cut the time of the treatment in half.

For a douche, one teaspoonful of bicarbonate of soda to two quarts of water or 1 to 50,000 potassium permanganate solution. Gauze should be inserted between the lips of the vagina and changed as often as soiled.

If suppuration takes place within Bartholin's glands, they should be opened from inside the vagina with scissors or scalpel. Carunculae or warty excrescenses at the mouth of the urethra or on the vagina should be removed by diathermy.

In chronic gonorrhea the pus or mucous must be first removed before beginning ultra-violet radiation treatment. With cotton on a wooden applicator swab the cervix with 1% mercurochrome or 1% silver nitrate solution after the radiation.

The same general rules for ultra-violet radiation treatment in acute gonorrhea holds true for chronic gonorrhea. In chronic gonorrhea, however, the profuse discharge is not present, being supplemented by a thin serous discharge. In these cases the quartz vaginal speculum may be used. A very small amount of lubricating jelly is put on the tip



Illustrating how patient is prepared for first application of ultra-violet radiation to body. Note how face is protected from rays. On subsequent exposures the lower part of the body is exposed.

of the speculum and it is inserted into the vagina. The speculum causes no pain and the fact that there is no tampon saturated with a dye within their vagina is appreciated by all women. Long quartz rods may be inserted up the cervix in those cases, in which there is a resistant cervical infection. On removing the quartz speculum from the vagina hold it under the water so as to wash off any adherent mucous and pus. Then dry it. The speculum may then be wiped off with a piece of cotton soaked with alcohol and put away.

Dosage in General for Intra-Vaginal Exposures. Begin with two minutes increasing gradually one to two minutes at each treatment up to the point of tolerance. For cervical treatment use quartz rod beginning with two minutes, increasing gradually one minute at each subsequent treatment. The meter reading should be approximately 50 volts.

Extract from A. M. A. Journal, Feb. 12, 1921

Phototherapy in Gynecologic Disease. Recasena reviews the history of the application of sunlight and the mercury vapor lamp in therapeutics, and especially in the diseases of women and in the healing of war wounds, emphasizing the immense progress realized with the artificial sources of the ultra-violet rays. The bactericidal action of the ultra-violet rays has been demonstrated in many ways, just as molds dry up and die when exposed to the sunlight. Chronic gonococcus gynecologic processes may subside completely under exposure to ultra-violet rays, as also essential vulvar pruritus, solely from the analgesic action of the actinic rays, in three, four or five exposures. The sun's rays are less active applied locally, but they have a very pronounced action when the whole surface of the body is exposed. Recasens adds that many have reported benefit in epilepsy from heliotherapy, and as we know the preponderant role of the parathyroids in tetany, it seems plausible to assume that the parathyroids are favorably influenced indirectly by substances mobilized from the skin under the influence of the actinic rays. The number of cases of tetany cured by exposure to ultra-violet light is too large for a casual coincidence. The sedative action of the exposure is remarkable; the excitable and restless are tranquilized and often drop into tranquil slumber. He states that leukoplakia of the vulva and craurosis have been materially benefited by the ultra-violet rays in a number of instances, so that now he thinks it is a sin of omission to refrain from insisting on ultra-violet treatment for them, especially as leukoplakia so often is followed by epithelioma. In erosions of the cervix, the ultra-violet rays have yielded notable curative results in his experience. The day is past, he adds, when operative measures were applied to processes of this nature, but they are often rebellious to local treatment, while they yielded to a few applications of the ultra-violet rays, both simple cervicitis and papillary vegetations. In one case the lesion seemed to be a cancer, and hysterectomy had been advocated, but under six applications of the ultra-violet rays the pseudo-ulcerative process disappeared completely. The discovery of giant cells in the lesion was not confirmed by the finding of tubercle bacilli. Tuberculous peritonitis of genital origin is a special indication for actinotherapy; if there is much ascites a laparotomy may be necessary, but with or without this it is the most effectual treatment when systematically applied. Without ascites, he adds, there is no excuse for a laparotomy, as the actinotherapy alone gives excellent results. Woody phlegmon of the broad ligament has also yielded to general light baths or heliotherapy in a truly remarkable manner. The sunlight—or the mercury vapor lamp in its absence—does not act on the phlegmon directly but by its activation of the organic forces in general, as also in white swelling of the knee, hip joint disease, and amenorrhea or uterine hemorrhage without an organic basis.

Suggestions of Use in General Radiation

It is always best to expose the entire body.

Should there be objection to the tan which usually follows a series of exposures, the face and neck may be protected. The eyes should always be covered, preferably with a small pledget of cotton over each lid.

Partial exposures such as are at times given the chest or back are of but limited benefit when compared with results obtained from total radiations.

The rays which flow from the center of the arc tube are the most active and should be directed at right angles to the abdomen. The light field will be found of sufficient area to cover the entire body at one time.

There is a marked difference in the resistance of blonde and brunette types. Patients with red hair have even less resistance than blondes.

The scale given below is offered merely as a guide. It is based on the assumption that the lamp used is the air-cooled, 110 volts, direct current and that the arc tube is in good condition. Voltmeter reading showing approximately 70 volts in the burner.

	Time in Minutes		Distance
Radiation	Blonde	Brunette	Inches
1st	1	1½	40
2nd	2	2	38
3rd	2	3	38
4th	3	4	38
5th	5	5	36
6th	6	7	36
7th	7	9	34
8th	9	10	32
9th	10	11	32
10th	10	13	32
11th	12	15	32
12th	12	15	30
13th	14	15	28
14th	14	15	26
15th	15	15	24

Subsequent exposures may be carried on according to reaction. In exceptional cases the dosage may be increased at the physician's direction. It is of course possible to give heavier dosage by reducing the distance and increasing the time, this depends on the nature of the case and the patient's tolerance.

The tan which results is usually an indication of success, co-inciding with improvement in general health.

In extreme malnutrition and suboxidation, the patient may be sensitized, in which case it will be necessary to hold to the three or five minute limit for several days in order to avoid unpleasant reactions.

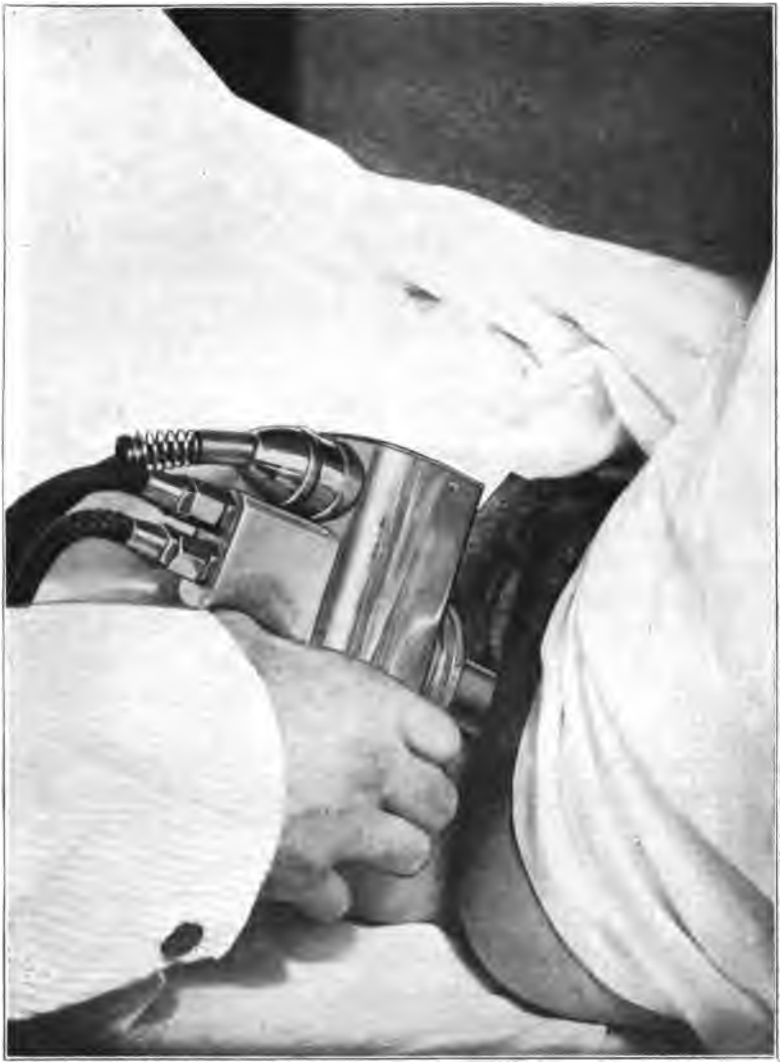
Some physicians are now exposing both sides of the patient as well as the anterior and posterior surfaces. This is of particular benefit in the first ten or twelve sittings and applies particularly to psoriasis and para psoriasis.

Cystitis. Definition—An inflammation of the mucous membrane of the urinary bladder.

Etiology. An inflammation of one of the adjacent organs usually causes an extension of the process into the bladder. Inflammation of the urethra, prostate, seminal vesicles, ureters, kidneys and rectum may extend directly into the bladder. Infection due to residual urine is also a very frequent cause. A residual urine may be due to a pocketing of the bladder due to a cystocele, a prolapsed uterus drawing down bladder, stricture of the urethra, hypertrophied prostate or carcinoma of the bladder, paralysis of the nerves to the urinary bladder due to fracture or disease of the spine, congenital or acquired divertulum, fistula connecting with uterus, vagina or rectum and tumors of the bladder. Severe cold, alcoholism, drinking water containing too much chlorine or dirty instruments introduced into the bladder are also contributory causes.

The exciting cause is due to one of the following organisms: B. Coli, staphylococcus aureus or albus, streptococcus, tubercle bacillus, B. fecalis alkaligenes. Gonococcus (rare) typhoid (rare).

Pathology. The infection reaches the mucosa either by direct extension or by blood and lymph streams. The micro-organisms are implanted on the mucous membrane of the trigone or near the ureteral orifices. Hyperemia,



ILLUSTRATING TECHNIQUE OF APPLYING ULTRA-VIOLET RADIATION WITH WATER COOLED LAMP THROUGH VAGINAL QUARTZ APPLICATOR.

infiltration of round cells, leucocytes and exudation of serum takes place. If the process continues, erosions form at the site of tissue destruction which form into ulcers. The deeper coats of the urinary bladder are affected later.

Symptoms. The frequency and urgency of the urination is increased. In severe cases there is pain on urination. Gross examination of the urine shows it to be turbid, purulent or bloody. Microscopic examination of the urine shows many pus cells which are frequently clumped together—epithelial cells from the bladder, red blood corpuscles and a large number of bacteria. Constitutionally, there is fever, the severity of which depends upon the degree of infection. Anemia and sepsis are marked when the case is advanced.

Diagnosis. Differential diagnosis must be made from pyelitis. In pyelitis there is a periodicity of the symptoms and the examination of urine obtained on urethral catheterization shows the infection is from the kidney and not from the bladder. In pyelonephritis the symptoms are referable to the kidneys and urine examination shows albumen and casts.

Treatment of Cystitis. Mild cases are best treated by first determining the reaction of the urine. If the urine is acid, then an alkali should be prescribed as follows:

℞

Potassium Citrate	6
Potassium Bromide	8
Tincture Hyoscyamus	15
Syrup of Orange	30
Aqua Q. S. ad.	120

Sig. One teaspoonful in water every 3 hrs.

If the urine is alkaline then sodium acid phosphate
Gr. V in capsule
Sig. One capsule q. 3 hrs.

In addition, Thermotherapy and Ultra-violet radiation, local and general.

In severe cases, with considerable pus formation, the patient should be put to bed until the acute symptoms pass over. An incandescent heat lamp suspended about 30 inches above the symphisis and allowed to act for 30 minutes a day is beneficial. If this is not feasible, then electric pads should be applied over the bladder area. Do not apply any local medication in the acute stage but wait until the sub-acute stage has entered.

Chronic Cystitis. Definition—A chronic inflammation of the mucous membrane of the urinary bladder.

Etiology. Same causes as listed under acute cystitis; but where the focus of infection has not been removed and where treatment has been neglected.

Pathology. Same as under acute cystitis and in addition thereto the inflammation spreads into the deeper layers of the bladder. The mucosa is greatly thickened and considerable connective tissue changes are present due to ulceration and necrosis. Sacculations are frequently formed and pus is removed from these sacs with difficulty. The bladder may be trabeculated due to irregular thickenings of muscles and a thinning of the mucous membrane between the ridges.

Symptoms. Similar to those of acute cystitis except that the symptoms are less severe.

Diagnosis. Made on the symptoms, cystoscopic picture, urine examination and the course.

Treatment. Local irrigation of the bladder with warm potassium permanganate solution 1 to 6000 or silver nitrate in strengths varying from 1 to 20,000 to 1 to 6000. The solution may be introduced into the bladder by means of a catheter or hand syringe or by gravity irrigation. Ultra-violet radiation, local and general. See page 117 for dosage table. East Indian santal wood oil and alkalies.

Acute Urinary Fever. A condition characterized by a sudden rise of body temperature, prostration, chills and sweats, usually a result of injury to the genito-urinary tract. Absorption of toxic substances is the cause.

Etiology. The predisposing causes are dirty instruments and catheters, too frequent or rough instrumentation, old age because of lowered resistance, previous mild infection of kidney pelvis or kidneys.

The exciting cause is one of the microoganisms which frequent the urinary tracts as B. Coli, staphylococcus aureus and albus, streptococci, gonococci, pneunococci and bacillus fecales alkaliganes.

Symptoms. The condition usually manifests itself by a chill coming on a few to several hours after instrumentation. A sudden rise of fever follows and the patient feels intensely ill. A sweat usually breaks out and then the fever falls and the secretion of urine recommences.

Treatment. Prophylactic—Extreme gentleness in the use of any instrument within the urethra. Asepis of instruments. Avoiding instrumentation in the presence of pus or while the urethra is acutely inflamed.

Active Treatment. Hot Sitz bath for 10 minutes. Keep the patient in bed and covered up. Keep an electric pad to the suprapubic region.

If the flow of urine is decreased, give a diuretic, e. g., potassium citrate 20 grains in water T. I. D. For headache, the compound acetanilid powder, five grains when necessary is very beneficial. Quinine sulphate gr. 2 internally with hot lemonade is helpful. Support the patient and treat the symptoms as they arise. The prophylactic treatment is most important and if the patient is going to have quite a bit of instrumentation done, it is best to do it in a hospital where he can be put to bed at once and treated.

Chronic Urinary Fever

Etiology. Predisposing causes are chronic cystitis, hypertrophied prostate, stricture with retention of urine, seminal vesiculitis and nephritis.

The exciting cause is due to one or several of the organisms listed under acute urinary fever, only that the organisms are in an attenuated form and the resistance of the patient is increased.

Symptoms. A mild sepis is present and manifests itself by a dry, furrowed tongue, constant thirst, gastritis, diarrhoea, headache, loss of weight and strength due to anemia. Urine examination shows pus cells in abundance. The odor of the urine is often ammoniacal.

Treatment. Depends upon the cause; the main idea being to prevent stagnation of urine in the bladder and preventing as much infection as possible. Irrigate the bladder with 1 to 40,000 silver nitrate solution. If there is retained urine, draw it off. If the urine is highly ammoniacal, give acid sodium phosphate gr. X T. I. D. Increase the fluid intake and elimination through the skin.

LECTURE VIII

Impotence in the Male

Definition.—Inability to produce an erection sufficient to consummate the sexual act.

Etiology. Impotence may be due to organic changes or psychical disturbances. The organic changes may be congenital but are usually acquired. Affections of the brain due to disease or injury in which there is partial or complete injury to the sexual centers or to the sexual associating paths. Tumors of the brain, sclerosis due to syphilitic or arterio-sclerosis, tuberculosis of the brain or meninges, meningitis, hemorrhage, thrombosis or embolism, multiple sclerosis, epilepsy, injury to the spinal cord, tabo-paresis, progressive muscular atrophy and progressive muscular dystrophy and syringomyelia.

Affections of the testes which injure or destroy the hormone producing cells. Most frequent are syphilis, mumps, morphinism and tuberculosis. Of the rarer causes there are X-ray, injury, crytorchidism or monorchidism, removal of the testes, long exhausting disease and chronic alcoholism.

Affections of the epididymis seldom produce impotency. Prostatitis is one of the most frequent and important cause of impotence. A large number of gonorrheas are complicated by a posterior urethritis and this means also prostatitis. Though the symptoms of a prostatitis may abate, yet an examination reveals a bulgy prostate containing pus months after the acute infection has passed. Then, too, the pus may be absorbed causing a sclerosis of the prostate. Too long has the prostate been regarded as an organ which complicates gonorrhea and becomes large in old age, causing urinary disturbance. Besides acting as a relay center between the external stimuli from the penis and the spinal cord and brain; the prostate possesses an internal secretion. The prostate has been aptly termed the soul of the sexual power. Chronic prostatitis and seminal vesiculitis are also the cause of premature ejaculations due to the lack of muscular tone.

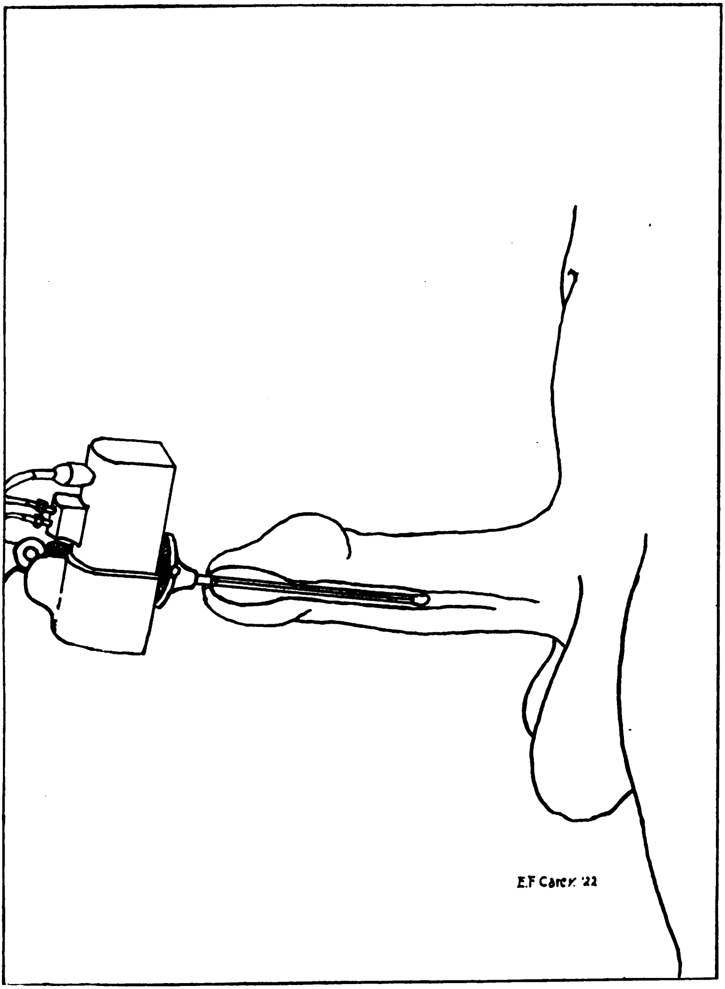
Conditions of the penis that may cause impotence are epispadias and hypospadias, extreme phimosis, short frenum which causes pain during erection, tumors of the penis, malformations due to operations and tight strictures.

Certain general conditions such as extreme obesity, anemia, leukemia, sexual excesses and severe fatigue and prolonged abstinence will also bring on this distressing condition.

Physiology of Normal Coitus. The sexual centers in the brain are stimulated by impulses arriving from any of the five senses. The sight of an attractive woman, the odor of pleasant perfume, hearing certain strains of music, pleasing sensation of taste and touch all together or separately may stimulate the sexual center in the brain. These messages are then relayed to the erector center in the spinal cord which is located in the lumbar enlargement. The erector center may be stimulated directly by impulses from the end organ, the penis. Stimulation of the vaso-dilators cause the arteries to dilate and there is an increase in the blood supply to the penis. The corpora cavernosa and corpus spongiosium are filled with blood and by pressure compress the veins of the penis and so prevent the blood from leaving the organ. The extrinsic muscles, namely, ischio and bulbo cavernosus and the intrinsic muscles aid in shutting off the venous outflow. After the organ has become turgid and stiff, it rises, being aided by the suspensory ligaments, the fundiform ligament and the perineal muscles. Cowper's glands, the glands of Littre and the prostate, pour out a mucous secretion upon the surface of the urethra. There has been no satisfactory explanation of the manner in which the spermatozoa leaves the testes and reach the seminal vesicles; however, the theory being that muscular activity upon the testes, epididymis and vas, aided by peristalsis, will cause the upward passage of the spermatozoa. When the ejaculation center has been sufficiently stimulated, it causes a contraction of the musculature of the seminal vesicles. The contents of the vesicles mix with the prostate secretion forming semen and with the aid of the perineal muscles cause a forceful ejaculation of semen.

Before proceeding, it is necessary that the psychic causes of impotence be enumerated. Psychic trauma due to fear of detection, fear of impregnating mate and the consequences, fear of acquiring disease, religious fear, recollection of previous failures in attempting to perform the sexual act, fear of the inability to perform the act successfully, prolonged abstinence, extreme excitement which is ungratified, disgusting odors, dislike of the mate, sexual perversion and neurasthenia are the most common causes of the physical causes.

Pathology and Symptoms. When there is hyperirritability of any of the end organs, the usual result is premature



Intra-urethral application of ultra-violet radiation.

ejaculation because the nerve impulses are passed so quickly there is no time for the normal amount of friction. Besides, the mouth of the duct of the seminal vesicles has not a great deal of control because of its hyperirritability. It cannot retain the spermatozoa the required time and because of the irritability in the posterior urethra the semen is pushed out, rather than retained. Because of the short duration of the erection, neither the man nor woman is satisfied. When there is an interference with the passage of nerve impulses, then there is only partial or no erection. Introitus is then impossible. Neurasthenic and hypochondrical symptoms predominate.

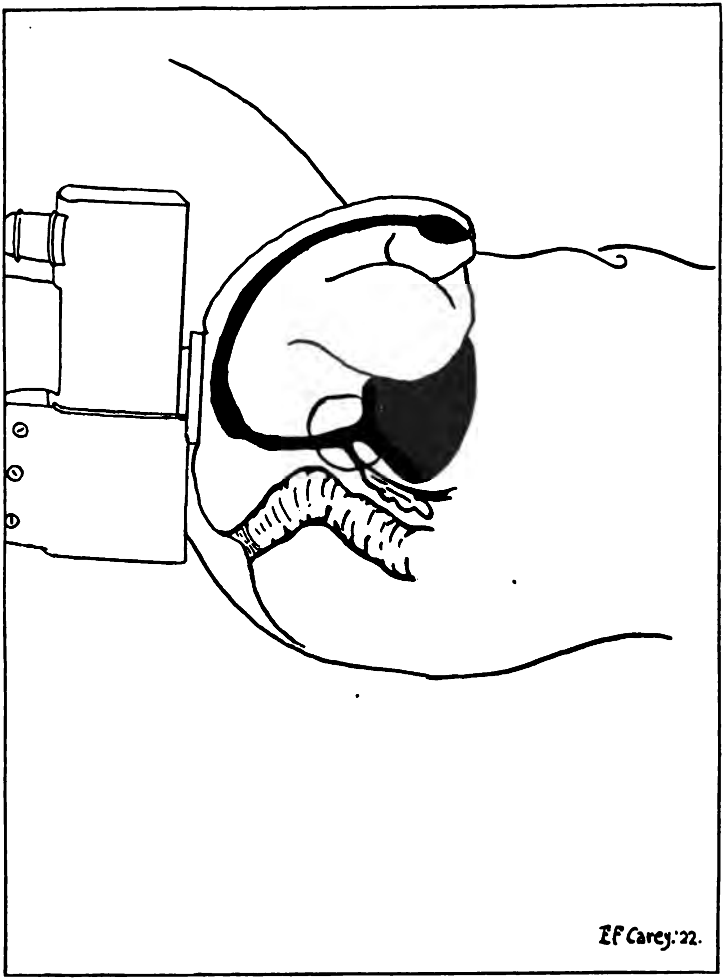
Treatment. Prophylactic—Impotence is in a large part due to our economic and social system. This, however, does not mean that the present system of society should be immediately condemned but by gradual changes we should improve the state of our being before we indulge too much on the perfection of state machinery. If every man had the opportunity of becoming married at the proper age—if every man who had the gonorrhea had enough money and wisdom to fall into the hands of a doctor capable of curing him—if society was not bent on the industrial efficiency craze, there would be little impotency. But that is all for the millenium.

What can we do to prevent this terrible condition? Impotence is the cause of much of the nervousness of women. Think of the nerve strain of a woman who must sleep beside a man who is incapable of performing his duty. We must begin with the young and tell them the whole truth about sexual affairs as it concerns them. Tell them the real honest straight forward facts about sex and you remove the great mystery that surounds it. Give the lad information so that he does not have to go to the street corner to get it from the gang. Of course, if the boy has a tight foreskin he should be circumcised. Tell him the nature of wet dreams; that all they are is a little excess steam arranged for by nature in a convenient manner. It is common talk amongst boys and more especially adults, that wet dreams are weakening and mean a loss of vitality. Such doctrines are due to the trail left by the old scare school who traced all the ills of the world to masturbation. Fathers, teachers and guardians should honestly inform their charges that to play with their sex organs is not healthy and they should also be informed that every man has masturbated a little in his life and that this has caused him no harm. Most boys somehow or other get hold of books which tell the awfulness and sin of masturbation and even the medical writers of the past generation went way off on the matter. Their policy was to frighten the boy, and frighten them they surely did. However, the bad results of these teachings have not yet worn themselves away, and today thousands still worry about their "awful acts" or the "unpardonable sin."

Coitus interruptus, the method of withdrawing the penis just before ejaculation was devised to prevent conception. It succeeds in this and also succeeds in bringing on nervousness and later impotence. If people had the necessary knowledge of birth control, they would know what to do after they had all the children they cared for or could afford.

Americanitis, a disease named by Grover, is caused by long working hours, full of tension, in order to amass a few more dollars. Constant business worry and excitement will cause sexual matters to be relegated to the file of unimportant or unfinished business, the result being that desire fails and men forget their duty. They also forget that love and life are all and everything to a woman and she needs that one thing in her life above all else. When the physician takes hold of the affairs of people in the true preventative sense, he will impart all this information to his people (not necessarily patients). And even though he is giving them no medicine, he is preventing conditions that no medicine can cure and should be rewarded by just remuneration.

Treatment. To faithfully and efficiently treat and cure gonorrhea would prevent the major part of impotency. The complications and sequelae of gonorrhea may not seem very important and the average man after a gonorrheal attack states he feels as good as ever. Comparison, however, of a man with an old gonorrheal prostate and a man without the infection, it will usually be found that along about the age of 45 to 50, the man with the old infection will show little sexual activity while those without disease usually continue as long as they remain in good health otherwise. It is the gonorrheal prostatitis that causes the majority of the trouble. Pus in the prostate must be removed. Massage and instillations of silver nitrate comprise the usual method of treatment, together with hot water rectal irrigations. Though these methods have value, they are insignificant compared to the value of diathermy through the prostate and ultra-violet radiation to and through the prostate. These two agents have not only the power to remove waste by stimulating elimination but also



Ultra-violet radiation with blue filter to under surface of urethra.

serve to stimulate the healthy cells which have been dormant to renewed activity. When a man presents himself for treatment and a history of gonorrhea is elicited, slip on a finger cot; lubricate the tip of it with lubricating jelly and examine the prostate and express some of the secretion which you will examine under a high power microscope. If tender areas or sore places are found in the prostate or if a large bulging prostate is palpated, it means infection still resides therein and must be removed. Have the patient lie on his side with his back turned toward you and with a small dab of lubricating jelly on the tip of the prostatic quartz applicator insert it up the rectum until you reach the prostate. The rest of the technic is similar to that described on page 90. The first ultra-violet radiation should be but 2 minutes with meter reading 50 volts and repeat this every other day, increasing the time one minute at each treatment. If the prostate is large and bulging, a five or ten minute treatment with diathermy should precede the ultra-violet light treatment. Treatments should be given three times a week gradually increasing the dosage up to 10 minutes.

This method will not relieve every case of impotency but it will greatly assist those due to infection of the prostate, in which the process has not been of too long standing. Certainly, the prostate must have a function other than the production of a lubricant for the spermatozoa. Every indication points to it as a gland of internal secretion. This is indicated by the nervous manifestations following derangement of the gland. Just what function the gland plays we are unable to state, but we do know that when the toxic substances are removed from it, there is a marked improvement in the general nervous stability of the patient. Very likely light stimulates the enzyme or internal secretion of the prostate as well as the anti-body formation and the beneficial results are due not only to removal of waste but to the production of this necessary secretion. However, if there is complete destruction of the hormone producing element, no stimulation can induce a cell incapable of secreting to secrete, but where the function is only held in abeyance due to the toxic effect of retained pus or because of non-use, results can be achieved by inducing the glands to return to work. Many times the poor testis is blamed for improper or under function when the difficulty is due to a deranged prostate. To return these structures to their normal duty can best be accomplished by natural persuasion methods which will be found far more satisfactory than any sensational surgical procedure.

Surgery has made some inroad into the matter of restoring lost vitality and renewing youth. Much has been claimed for it but not so much can be seen in the way of results. It is not within reason to presume that a gland can be sprung into new activity over night by the slight procedure of tying off one or both vas. Gradual destruction means gradual loss of power and new life or substance cannot be injected by means of a hypodermic needle. New function means elimination of waste. Power returns in a gradual manner. Those who are constantly looking for a single certain substance to relieve man of the inconvenience due to indiscretion, shall ever look and search; for it is my opinion that no such substance will ever be found. Life is too complex an equation to be solved so simply. Our sex function is a multiple one, depending upon the various glands of the body, the brain and physical makeup. A diminished or weakened sex power may be due to one or several glands, to various psychic disturbances, and to the physical development. To restore activity we must proceed to use methods that are as natural as possible, and to date, feeding certain gland substances has produced better results then the more sensational surgery which consists of gland transplantation. The pituitary, thyroid and adrenals are connected with the sexual glands and must be considered when the matter of stimulation of function is considered. Radiant energy can and does modify the activity of the various glands of the body and for this reason, all cases should receive general body radiation as well as local treatment. Now there are many cynics who wish to have every function of the body definitely measured similar to the manner which a comptometer adds figures but such a scale and measure is for the distant future to produce. Though chemistry is quite an exact science, the chemistry of the body is still in its infancy, however, and it is not essential that we have the "why" of everything we do. We know that plants grow best when in the sunlight and when well watered, but to understand why is not essential for their growth. We cannot wait until we have learned the exact reason and manner of action of our doings or else medicine would not be practical. What we do know is that we have accomplished good results in a reasonable majority of cases. Most of the treatment in medicine is for the purpose of obtaining results, and thanks be that we shall continue to administer to the sick and unfortunate even though we do not know the exact method in which our remedy works.

We have dealt at some length on some of the commoner causes of impotency. As yet we have not mentioned inflammation of the posterior urethra which causes a hypersensitiveness of the tissue and lack of the usual power of contractility. One of the first signs of this disorder is premature ejaculation followed later by impotency. Though many workers use strong solutions, some even using the lunar caustic for direct application to the colliculus, I believe in milder methods and hence better results. It is indeed difficult to apply a strong silver salt to exactly the spot we wish to treat and so it is very possible to touch the healthy tissue and produce stricture. We find weak solutions of silver nitrate ¼ to ⅙ per cent efficient and in connection; the passage of a bougie or sound to press out the granulations.

Of the various drugs useful in the treatment, strychnine sulphate sugar coated tablets 1/30 gr. T. I. D., are very helpful in stimulating a man with waning power. It must be understood that the sex function cannot be restored simply by taking something. We must first find the cause and then treat. Sex function has been looked upon as a pastime that takes care of itself. My opinion, however, is that the sex function has little opportunity to functionate properly because any mention of sex in the family circle is tabooed.

Where then is one to learn of sex. Too sad but, yet true, that most people never learn a thing about it. We must give time to sex. We must give time to the beauty of life. We must give attention to the physical beauty of ourselves. We must learn to stretch the period of romance from a year to many years. Small amounts of alcohol in the form of wine or benedictine are beneficial. Several people only become sexually stimulated while under the mild influnce of wine. It seems these people have a strong inhibitive mechanism which is thrown out of play when alcohol severs its restraining power.

Change the business man who is bent on the stock market reports to a lounge lizard and you begin to see improvement. Baths followed by massage help those with sluggish circulation. A diet rich in fish, particularly sea food, has a decided influence. A vacation usually works wonders—the change of scenery, the absence of cares and worries—all help to rejuvenate the man and boy.

In this short work it is difficult to deal at length on problems that take considerable space but we have given the most important cases due consideration. However, a few words should be said on the subject of premature ejaculation.

Premature ejaculation probably causes more distress, worry and nerve exhaustion than any other condition known and incidentally much unhappiness and discord. Very little, in fact practically nothing, is said or spoken of or concerning this common malady. It seems those who suffer with it are most reluctant to confess their difficulty. What patient has the temerity to go to a physician and say—"Doctor, my staying power is very poor. I hardly make an entrance to my wife's vagina but what I have an ejaculation." Most histories of premature ejaculation are either gotten from the patient piecemeal in such a clouded fashion that it is hard to see the real issue or else it is the doctor who sees the hidden mystery and makes easy its divulsion by the patient. Premature ejaculation is most

Fig. 1

Fig. 3

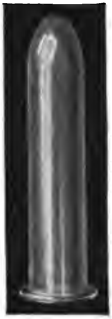


Fig. 2

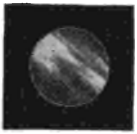


Fig. 4

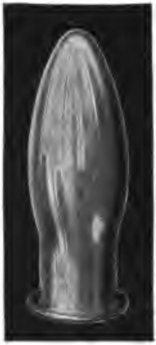


Fig. 5

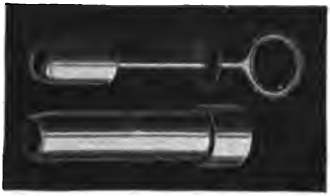


Fig. 6

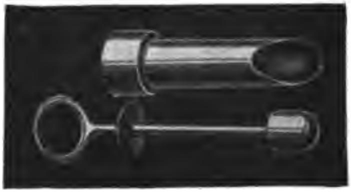


Fig. 7

INSTRUMENTS USEFUL IN ULTRA VIOLET RADIATION FOR UROLOGICAL WORK.

Fig. 1. Quartz rod, long.
Fig. 2. Quartz prostate applicator.
Fig. 4. Blue filter.
Fig. 5. Quartz vaginal applicator.
Fig. 6. Metal rectal applicator.
Fig. 7. Metal prostate applicator.

often looked upon as a pathological entity. In itself, it is not, for on questioning, you will find that most men have difficulty in staying power at first. Many never recover. Most men explain the weakness to themselves on the basis of their youthful indiscretions. And why shouldn't they? So largely are the penalties and dangers of masturbation exaggerated and so firmly are the awful penalties impressed upon the mind, that he rarely has an opportunity to rid his mind of these poorly advised statements. Damage once done to the mind of the adolescent is hard to retrieve. Therefore, it is not unnatural for a man to blame himself if all does not go off with clock work precision as soon as he steps into wedlock.

Let us consider the usual case. A man usually abstains as much as possible from sexual gratification prior to marriage and at last the eventful day arrives. Whether the function is a church affair, private or an elopement, the nerve tension is high and the average man wilts a bit under the strain. Evening having arrived, the groom and bride being exhausted, retire, usually being unprepared for the sequence of events that are destined to make them happy or unhappy in the years to follow. The man's erection is immediately established and usually forces coitus. Soon after entrance he has an ejaculation and he is thoroughly ashamed of himself because he has not lived up to his expectations, but worse he has not satisfied his wife, the woman he loves. Often he does not try the procedure until the next evening and then the same thing repeats itself. Sometimes the matter adjusts itself, but many times it fails to, and the man becomes irritable and cranky, the wife hypersensitive, nervous and cries quite constantly. What shall he do? If the man is not suffering from any pathological entity along the course of the genito-urinary tract then he should arise, wash himself, and by a little sip of wine or any soft drink so as to refresh himself, continue to enjoy the companionship of his wife. After a period of rest of anywhere from ½ to two hours it is very likely he will have another erection, and after suitable preparation it will be found that intercourse is much more satisfactory. Now it is found that the act may be prolonged to the mutual satisfaction of both parties and both feel that sense of elation and quietude so necessary. If the husband is prudent he will not allow a long period of days to elapse nor will he try the act too soon. Each man is a law unto himself and so is every woman and a loving husband can, by watching carefully the wishes and signs of his wife, so arrange their sexual lives that neither will be a burden but rather a pleasure to each other.

Sight should not be lost of the fact that an irritable posterior urethra may be due to an uncured gonorrhea, or because the urethra is hypersensitive from trauma because too much instrumentation was employed in previous treatment. In such cases the irritation may be gotten rid of by use of a mild counter-irritant in the urethra such as an instillation of weak silver nitrate solution ¼ to ½%. An inflamed prostate will also cause the same trouble and the suitable treatment has heretofore been taken up under the heading of prostatitis. Organic cause should always be searched for, and if found, is to be remedied.

Coitus condomatis deserves a few words because it is practiced so extensively regardless of the harm done by its use. Many women desire the feel of the semen and are deprived of the major enjoyment of the act when this is diverted. There are women who would rather go without intercourse than permit their husbands to use condoms. Probably the main reason is because of the unnatural feel of the condom. Besides, it is most unpleasant to have the delicate walls of the vagina rubbed by a dry condom. To add to the difficulty many men commence long before the proper time—before the vaginal secretion has commenced to flow. Of course, the woman complains of pain and is reluctant to repeat the process especially if she has no children. Children are essential to a woman's life and she has a right to demand them. If, however, condoms are used, lubricate the condom first with a coating of K. Y. jelly. Saliva acts equally as well, the only objection being the bruising of the esthetic sense.

Sterility in the Male

Definition.—The inability of spermatozoa to fertilize the ovum.

Etiology. Affections of the testicle such as syphilis, tuberculosis, tumor and mumps destroy the parenchyma and so prevent the production of sperm. X-ray exposure. trauma, cryptorchidism, chronic alcoholism, imperfect development, removal of the testis by operation or a long exhausting disease will destroy the reproducing power. Affection of the epididymis due to gonorrhea, tuberculosis, tumors or operations upon the epididymis may cause a stricture of the outgoing ducts and so prevent the upward passage of sperm formed in the testis. Stricture of the vas deferens due to operation upon the vas or caused by a growth pressing on the vas will also prevent the upward passage of semen. Affections of the seminal vesicles that will cause sterility are: stricture at the ejaculatory duct, tuberculosis, operation on the seminal vesicle, gonorrheal and pus infection and congenital absence of the vesicles. Conditions within the prostate that will cause sterility are: tuberculosis of the prostate, prostatitis, tumor and removal of the prostate. Affections of the penis that may cause sterility are epispadias, hypospadias, stricture of the urethra. Other causes are anemia, consanguinity, leukemia, and psychic trauma that destroys the elective hormone.

Pathology. Aspermia—Absence of any ejaculated fluid. Azoospermia—Absence of spermatozoa from the seminal fluid. Oligospermia—A few sperms are present in the semen. Necrospermia—Dead and deformed spermatozoa.

Diagnosis. Made on the examination of the ejaculated fluid, cystoscopic and urethroscopic examination and history.

Treatment. Depends upon the cause, and removing it if possible. Where the lesion has destroyed the generating cells of the testicle, nothing can be done. Where the sterility is due to a stricture in the urethra or where sacculations of the urethra are the cause, it is quite likely that the condition can be remedied. The prognosis in syphilitics of not too long standing is fair. Anastomosis between the vas and epididymis at some point above the stricture has produced results in a few cases. Repair of epispadias and hypospadias sometimes produce gratifying results.

Sterility in the Female

Definition.—The inability to produce an ovum that may be fertilized.

Etiology. Affections of the ovary—Imperfect development or absence of ovary, operations on or removal of ovary, mumps, tuberculosis, cysts, tumors and syphilis. Affections of the Fallopian tube—Congenital stenosis, removal of tubes, inflammation due to the gonococcus or other organisms and hematoma. Affections of the uterus—Bifed uterus, faulty position as acute anteflexion or complete retroversion, cervicitis, endometritis, dysmenorrhea and menorrhagia, prolapse, endometritis, infantile uterus, and tumors. Affections of the vagina—Acid secretions which destroy the spermatozoa, atresia of the vagina and vaginismus.

Treatment. When the sterility is due to faulty position of the uterus, correction by manipulative or operative means often is successful. Acid secretions may be neutralized by frequent douching with alkaline substance prior to intercourse. Artificial insemination may be tried in these cases. This consists in collecting a specimen of semen immediately after ejaculation and injecting it into the uterus by means of a syringe with a suitable metal point. Care must be taken to see that the instruments are kept at body heat as any chilling will destroy the sperms.

URETHROSCOPY

Anterior Urethroscopy. A direct examination of the anterior urethra by means of an electrically lighted tube called the urethroscope or endoscope.

Indications. For the diagnosis and treatment of lesions that do not respond to the ordinary methods of treatment.

Contraindications. All acute inflammations of the urethra.

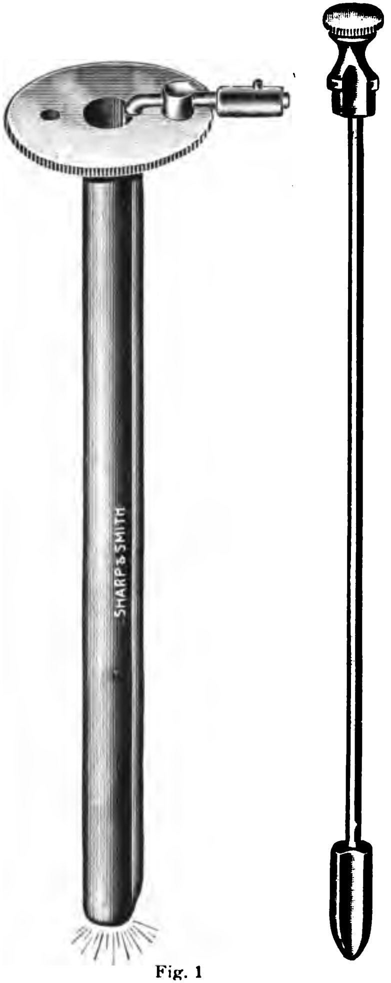


Fig. 1

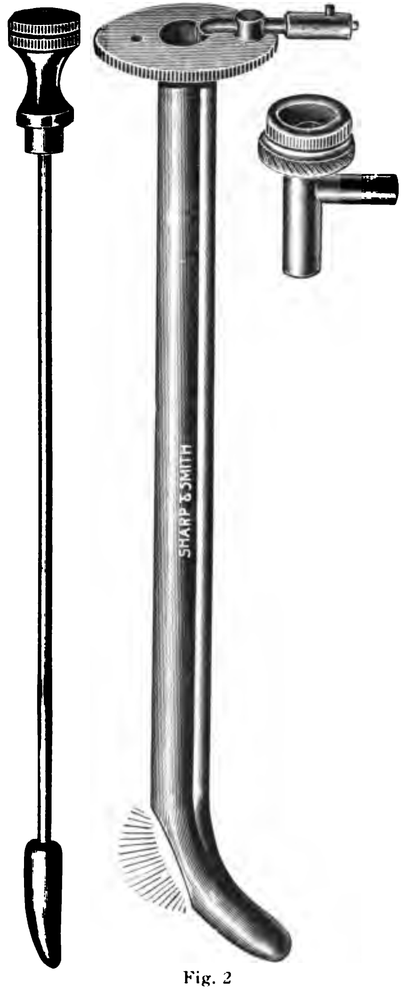


Fig. 2

Fig. 1. Anterior urethroscope.
Fig. 2. Posterior urethroscope, Swinburne's.

Technique. The urethroscope is cleansed by allowing it to remain for ten minutes in a solution of 1% lysol and then washing off with sterile water. The patient lies flat on his back and the urethra is anaesthetized by injecting 2 drachms of a 2% novocain solution and holding it in for two minutes. Apply KY jelly to the tip of the urethroscope and gently insert the instrument. The obturator is removed and the urethra swabbed clean by means of cotton applicators.

Normal Picture. A pale, pinkish yellow, glistening surface, with radiating pinkish striations. The lumen appears as a dark center or depression and is called the central figure.

Pathological Changes. Leukoplakia or whitish plaques due to thickening of the mucosa, foreign bodies, polypoid or papillomatous excressenses, inflammation of the glands of Littre or crypts of Morgagni, strictures either hard or soft, ulcerations and erosions.

The most frequent findings are inflammation of the glands of Littre and crypts of Morgagni which may be seen as red, pin-head size areas and reddened gapping slits. Purulent secretion at times may be seen to issue from these glands. In old standing cases the glands are obliterated by connective tissue or else a cyst is formed. The urethroscopic picture is that of grayish white areas which are slightly elevated and lusterless. In the case of soft stricture, the mucosa appears red and puffed, bleeds easily, and the striations are few. In hard stricture the mucosa is pale white and does not bleed easily. The central figure is small or distorted.

Treatment. The principal use of the urethroscope in the anterior urethra is to cauterize with high frequency any growths. Ulcerations may have to be touched up but as a general rule, only endoscope the patient when there is an absolute indication. The less instrumentation within the urethra, the better for the patient.

Posterior Urethroscopy. A direct examination of the posterior urethra by means of an electrically lighted tube called the posterior urethroscope.

Indications. To diagnose the cause of impotency, sterility and frequent urination. To medicate the verumontanum and posterior urethra.

Normal Picture. The colliculus or verumontanum appears as a small ridge in the floor of the urethra. In the center of the veru is a depression called the utriculus which is lined by stratified epithelium. The area extending from the veru to the bladder is marked by striae and is called the supramontana. The openings of the ejaculatory ducts are seen alongside the veru. The mucous membrane is very vascular and normally appears quite red when viewed thru the Swinburne urethroscope. When the water inflation urethroscope, Brown-Buerger, is used, the structures appear pale. The edematous condition of the veru so frequently seen is due very often to the instrumentation which traumatizes this sensitive structure. The floor of the urethra on either side of the veru is called the lateral sulcus and between the veru and external sphincter is called the inframontanum.

Pathological Changes. Veru, large, congested and swollen. Papillomata may arise from any part of the posterior urethra. The veru may be cystic or fibrosis may have taken place which cause it to become pale.

Treatment. Papillomata are obliterated by high frequency. Congested veru is treated by application of silver nitrate in strengths varying from one to ten per cent. The value of stronger solutions of silver is questionable. Iodoform emulsion 10% is of considerable value in healing small ulcerated areas. If any areas fail to heal they may be touched up with high frequency.

LECTURE IX

ULTRA-VIOLET RADIATION IN UROLOGY

A. J. Pacini, M. D.

That part of urology that has to do with the invasion ot urogenital structures by infectious organisms commands the attention of two therapeutic forces: (1) agents that reconstruct the chemical integrity of the invaded cells; (2) agents that exert a bactericidal effect on the invading organisms. And for these requisites, ultra-violet radiation is especially qualified through its peculiarly endowed property of exerting bactericidal influence and re-establishing cellular aberrancy. The re-establishing of normal cellular physiology is a quality that we denominate as "biologic"; and the destruction of pathogenic organisms is a quality that is called "bactericidal." Both of these activities are functions of the wave-length of the radiation; and so the physical principles underlying the production of the rays must be appreciated. This is summarized in the modern concept of ultra-violet energy in the classification adopted by leaders as follows:

ULTRA-VIOLET ENERGY

(Mercury Arc)

Air Cooled Lamp	Water Cooled Lamp
1. Near ultra-violet intensity	Far ultra-violet intensity.
2. Biologic (dominantly)	Bactericidal (dominantly).
3. Chemically oxidizing	Chemically reducing.
4. Relatively penetrating	Relatively superficial.
5. Metabolic synergist	Metabolic depressor.

Speaking first of the biologic effect of ultra-violet energy, which is a property of the wave lengths between 4000 and 3000 Angström units (air cooled lamp), the urologist is interested first in the "systemic" changes induced, and in the manner of inducing them.

Starting with the concept that urologic infection, like infection anywhere, is a dual entity comprising the joint activity of: (1) a virulent organism acting on (2) cells of lessened resistivity; it is observed that the therapy of genito-urinary infections involves the destruction of the organism and the uplift of the physiologic deterioration of the tissues. For the later, gradual general irradiation of the entire body is recommended.

Since there is little to fear from the possibility of visceral congestion attending general ultra-violet irradiation in urologic conditions, the treatment may be somewhat abridged by radiating the entire body in four exposures, as follows:

Lamp Characteristics:

Air cooled type.
Low voltage (about 70 volts).
Long tube-skin distance (forty inches).

Time and Area Factors:

First treatment. Chest, from neck to pelvic brim.
Eyes protected. Two minutes.
Second treatment. Back, from neck to pelvic brim.
Two minutes.
Third treatment. Entire body, chest upward.
Three minutes.
Fourth treatment. Entire body, back upward.
Three minutes.

This is considered a "course." The treatments are spaced one day apart. After the fourth treatment, a new course is begun, radiating in similar fashion, but doubling the exposure time.

This "stemic" treatment is a part of the therapy of all urologic infections. It is, of course, imperative that the area irradiated be naked. The rays must strike at right angles. The eyes must be protected. Improvement comes as the result of the metabolic readjustment that immediately follows these exposures, and to the changes in the blood and lymph leading to increased immunologic defense.

For the infection itself, the focal application of the bactericidal energy is required. Short ultra-violet wave-lengths are "abiotic," or profoundly bactericidal; but short ultra-violet wave-lengths do not penetrate deeply into the tissues. So that resort must be had to several important expedients, which will be recorded presently.

Considering first the problem of urethral infection by the gonococcus, we can present certain studies that are essential.

Very commonly, the measure of the bactericidal efficiency of an agent used to kill bacteria is expressed in terms of "phenol coefficient." That is, if a given concentration of phenol kills an organism in a certain time, the phenol coefficient of another agent is the longer or shorter time required by that agent to effect death. The organism used is generally the typhoid bacillus.

Newcomer beautifully studied the killing power of ultra-violet for typhoid bacillus and found the effect for various wave-lengths to decrease after 2800 units, reaching about one-half its value at 2870, one-tenth at 2950, and less than one one-hundredth at 2990. The maximum killing was in the region of 2600.

For the gonococcus, the same wave-lengths were found to be effective in about the same order (original work). We have elsewhere shown that the water cooled lamp, operated under certain important conditions, offers a maximum intensity of the 2536 region; or just the wave-length required for best germicidal activity. So that the lamp should, to be of greatest efficiency, be operated:

1. With free water circulation insuring maximum cooling.

2. Voltage never higher than 60, and very preferably 50.

Now, since the short wave-lengths that are bactericidal cannot of themselves penetrate but one or two microns of cell structure, their activity is confined to the surface. And it is a prerequisite that this be carefully heeded if best results are expected.

To convey the energy to interior surfaces, quartz applicators of various design are used. These rod applicators are supplied polished. They should be roughened on a grindstone, or etched with hydrofluoric acid. When roughened, the surfaces, by reason of their unevenness, act like a collection of a myriad prisms and thereby allow the light to scatter from the sides. This insures a distribution of the energy laterally instead of only at the end of the applicator.

A piece of writing paper, held between an eye and a source of light, is opaque; but if a spot of grease is rubbed into the paper, that spot is found to be translucent. Grease makes paper more permeable to light. Similarly, glycerin makes tissues more permeable to ultra-violet.

Certain dyes are found to act as sensitizers, like, according to Noguchi, eosin. Sensitizers increase the bactericidal capacity of light.

If an infected urethra is irrigated with a solution such as:

℞

Eosin	1 part;
Glycerin	10 parts;
Water	1000 parts;

the mucous lining becomes more transparent to ultra-violet (on account of the glycerin), and the infecting organisms are sensitized so as to be destroyed more quickly (because of the eosin). Since short wave-lengths are abiotic, which effect can ultimately destroy surface epithelium, it is important that water cooled ultra-violet exposures be very short in duration. So that the general technic resolves itself into:

1. Irrigation of urethral tract with glycerin and dye (eosin, fuchsin, methyl violet, rhodamine, fluorescein).
2. Introduction of roughened applicator.
3. Short exposures—less than 20 seconds.

It is only possible to discuss here the general features of ultra-violet therapy. The special applications are modifications of these principles arranged to meet the individual emergency of the case, and are separately recorded. If the subject of ultra-violet therapy had to be reduced to a few phrases explanatory of the situation, it could be justly said that:

1. Ultra-violet should be used for its biologic aid in all urologic conditions.
2. Ultra-violet has certain peculiar physical features that

must be known if a correct interpretation of the energy is desired.

3. Ultra-violet, like all medication in urology, must be under- rather than over-used. For much ultra-violet, especially water cooled energy, is as harmful as too much silver nitrate or other medicinal agent.

4. Brilliant results award the patient and intelligent actinotherapist practicing urology.

PELVIC INFLAMMATION: ITS SECONDARY PATHOLOGY AND ULTRA-VIOLET RAY TREATMENT

Pelvic inflammation is a clinical concept that includes pelvic peritonitis and pelvic cellulitis. It would appear, at first hand, that the two conditions might readily be separated; but difficulties of differential diagnosis are sometimes so great as to preclude any absolute distinction until after an exploratory operation.

Pelvic Peritonitis

Definition. An inflammation of the pelvic peritoneum.

Etiology. Most usually pelvic peritonitis arises as a result of an extension to the peritoneum of inflammations involving the uterus, ovaries or tubes; and in the great majority of the cases, inflammation of the tubes. First, there may be an endometritis; then a salpingitis; and then a peritonitis. When the course of infection takes the avenues described, the pristine disorder may be traced to infection of the genital tract, such as that incident to: (a) Gonorrhea, (b) Introduction into the genital tract; anywhere of septic materials, as from instrumentation. Or the infection may extend by way of veins and vessels from the uterus into the broad ligament, omitting the intervening tubes.

Pathology. At first the peritoneum becomes hypermic, its lustre is lost and exudation forms and accumulates. According to the quantity and character of exudate, pelvic peritonitis may be:

(1) **Adhesive**: In which there is scarcely any serum exuded; the inflamed arēa being coated with fibrin and adhesions form which bind together the pelvic organs and intestines.

(2) **Serous**: In which the exudate consists mainly of serum and lies either free in the peritoneal cavity or is encapsulated by adhesions.

(3) **Purulent**: In which there is a severe exudate, and when especially septic, the exudate is almost wholly purulent.

Pelvic Cellulitis

Definition. An accumulation of serous exudate with or without fibrin and white cells, involving principally the cellular structures of the peritoneum.

Etiology. Pelvic cellulitis arises as the result of two causes, summed up by Cragin in the words traumatism and sepsis. Traumatism may come from labor, abortion or cervical operations; or from impaired physiological integrity of the individual cells of the pelvic structure (physiologic trauma).

At one time, pelvic cellulitis was considered common; but the experience gained through exploratory laparotomies teaches that masses and thickenings are most frequently found to be salpingitis and peritonitis. So that although pelvic cellulitis exists, its occurrence is fairly infrequent.

Pathology. Serum, fibrin, and white cells accumulate. This exudate may resolve; it may form new connective tissue; or it may suppurate, and often does. When it suppurates the pus may point above the pubes, or it may rupture into any of the adjacent structures, as the vagina, bladder, rectum or uterus.

Secondary Pathogenesis

In cellulitis, as in peritonitis, two distinguishing pathologic phenomena are resident. The first is the presence of a pathogenic organism; the second is a lowered threshold of physiologic integrity on the part of the individual cells in the region invaded by the organisms. Too little attention is paid to the topic of cellular contribution in the process of infection. It is generally summarily dismissed by referring to it as "immunity" or "resistance." The accumulation of exudate is a significant index pointing to an impaired metabolism, and therefore alters the exchange existing between blood supply and cellular activity. It seems that we could include pelvic cellulitis and peritonitis under the general term of pelvic inflammation both being clinically related and being different manifestations of the same pathologic process. They differ only in the virulence of the attacking organism and in the anatomical orientation that the infection assumes. So that we may refer to the infectious character of these affects as the pristine pathogenesis of pelvic inflammation; and to the inhibited cellular physiology that leads to exudate formation as the secondary pathogenesis.

The secondary pathogenesis of pelvic inflammation is a factor that can be corrected through the proper administration of ultra-violet ray exposure. Stimulative erythemas are applied over the back and front of the nude individual (it is sufficient generally to expose from the waist up). The stimulation produced increases cellular metabolism in the surface structures. The radiations induce a change in the assimilative constant of the blood, making it more readily available for cells that are below par. This is another way of saying that systemic exposures to ultra-violet ray raise the resistance or immunity of the individual.

Treatment of Pelvic Inflammation. Primary pathologic factors, such as endometritis, fibroids, chronic salpingitis and similar infections must be removed by operative interference if the potential cause for pelvic inflammation is to be eradicated. In the acute stages of infection the amount of exudate reaction is an index of operative treatment; if the reaction is purulent and the exudate accumulates rapidly, drainage is indicated; if the reaction is fibrinous and goes on to chronic course, it is better to resort to measures that increase immunity and that will make for resorption of plastic exudation.

In all cases, systemic ultra-violet radiations are indicated, whether operation is contemplated or not. In the non-operative cases it is often possible to restore maximum normalcy to the pelvic structures. In the operative cases, the return to normalcy is exhilarated through the stimulative and regenerative reaction of the ultra-violet rays.

Method in Non-Operative Cases. Systemic radiation over the back and front producing stimulative or regenerative erythema. The reaction must be initiated and maintained. Immediately following the appearance of the first stimulative or regenerative erythema, the redness is watched, and at the first sign of its tendency to disappear, the second dose is applied. The intervals are found to be usually between 24, 36 or 48 hours.

Intra-vaginal radiations may be given in those cases where the primary pathologic focus is of intra-vaginal origin. The method is similar, the regenerative erythematous dose being applied through a speculum.

Method in Operative Cases. At the laparotomy subsequent to the completion of the surgical measures, the pelvic peritoneal cavity is exposed to the influence of the stimulating and regenerating ultra-violet rays before closing the wound. Through this expedient the ultra-violet rays exert their bactericidal qualities and initiate maximum immunological changes in all the affected cells upon which they impinge. Following the closure of the wound, and after cellular healing of the incision is well established, systemic radiations are given as indicated for the non-operative treatment, in order promptly to re-establish the general well-being of the patient.

Summary. In those gynecologic conditions where the establishment of pathology arises subsequent to the impairment of vital function of cellular structures, eminently successful results follow the use of ultra-violet radiations, the success being dependent, apparently, upon the especially stimulating effect that these rays produce on the tissues coincident with their pre-eminently bactericidal agency.

The exact technique is determined by the pathology and anatomy of the disease to be treated; the fundamental principle being the institution of an erythematous dose and its maintenance until maximum benefit is gained (frequent repetition).

FACTORS INFLUENCING DOSAGE IN THE USAGE OF WATER COOLED QUARTZ LAMPS

There is a term used in optical physics which expresses an important situation. The term is "optical contact." It denotes a contact so perfect as to transmit light without loss, or with only the minimum loss, of efficiency.

Imagine a crown glass rod ½ inch in diameter and 6 inches in length, of such clearness as to permit the ready visualization of common objects viewed through the long axis of the rod. Now, suppose the rod to be broken in its middle, giving two fragments each 3 inches long. If the fractured ends are approximated, and objects again viewed through the approximated fragments, it will be seen that:

(a) If the approximated surfaces are polished and perfectly plane, and excellent contact is secured, the efficiency is not lessened;

(b) If the approximated surfaces are ragged and imperfectly fitting, the transmission of light is impaired in proportion as the ends are uneven.

This hypothetical experiment, which can be quickly verified by trial, points out what is meant by "optical contact."

It is known that far Ultra Violet is powerfully bactericidal. It is known also that the bactericidal region centers around the spectral band measuring 2563; and that Ultra Violet wave-lengths shorter than 2900 (from 2900 to 1849) cannot penetrate greater depths than 1 or 2 microns. Which means that far Ulltra Violet energy can be utilized as a bactericidal, only if the infected locus falls within the limits of far Ultra Violet penetration, and only if the energy is brought into "optical contact" with the infected tissue.

This, then, is the essence of Water Cooled Quartz lamp technic:

(1) The radiation from the Water Cooled lamp is powerfully bactericidal;

(2) But it can exert its bactericidal activity only in proportion as the energy reaches the infected focus; or, expressed scientifically, in proportion as a perfect **"optical contact"** is made.

What will be considered at this writing are the means for securing and establishing "optical contact," and the more exact quantitative evaluation of dosage: a factor in Ultra Violet therapy that is imperatively necessary, and that has for time been completely lacking in Ultra Violet literature.

Speaking first of applicators, it will be observed that quartz lamp instrumental accessories are divisible in groups; metal tubular devices, quartz rod applicators, quartz lenses, quartz speculate instruments and combined metal and quartz instruments. All these instruments present a variety of forms and are utilized for many purposes. They present different designs and their length is from a fraction of an inch to several inches. From which it is obvious the intensity of the Ultra Violet energy delivered at the end of each applicator differs. A simple yet practical method to determine the relative Ultra Violet intensity issuing from each accessory instrument, is as follows:

a; metal tubes;
b; quartz rods;
c; quartz lenses;
d; miscellaneous.

2. Start the Water Cooled lamp and allow it to "build up" to its operating voltage, which should be from 50-60 volts.

3. Fit applicator designated 851 (½ inch metal localizing tube, 2″ long) into casing.

4. Expose a 2″ square of Keystone blue print paper, which may be procured in advance from any dealer in photo-supplies, and which must be absolutely fresh, for 10 seconds exactly (measured by the second hand of a watch, or better by a stop-watch), holding the paper flat and steady against the opening or end of the applicator.

5. At the end of 10 seconds exposure, remove the paper, mark in pencil the number of the applicator for identification, and develop the blue print in water in accordance with the instructions that accompany the blue print paper.

6. Repeat this experiment with every applicator that forms part of the Water Cooled lamp accessories.

This simple means provides a comparative record of the relative actinic intensity issuing from any type of applicator used with the lamp; and the operator next proceeds to list the "intensity or application factor" for future reference, about as follows:

Again selecting 851 as the standard, compare the blue prints obtained from each applicator against this one. Estimate how much more or less intense each applicator intensity appears, using fractional approximations such as ⅓, ½, ⅕, ¼, etc. Greater exactness is not necessary. Here is a reproduction of the test described:

From the studies reviewed in the chart just presented, the relative intensity of the application transmission is recorded, as follows:

Applicator	Factor
851	1
852	1
853	1
864	3
865	2
41	2
46	1
47	1
58	¾
59	2
61	2
62	1
67	3
95	2
96	2

Having established the relative exposure value for each applicator, the clinician next proceeds to determine the "absolute" exposure value, as follows:

Selecting applicator designated 851, and with the lamp operating at its full voltage (from 50-60), the operator exposes four areas on the internal bicep surface of the arm (left) so that each receives:

Area	Time
1	15 seconds
2	30 seconds
3	45 seconds
4	60 seconds

The lamp is held firmly against the arm. The illumination must strike at right angles.

When the erythemas develop, their degree is estimated and recorded, as follows:

Area	Time	Erythema
2	30 seconds	stimulative
3	45 seconds	regenerative
4	60 seconds	desquamative

By stimulative is meant a definitely established reddening, perceptible, but not too intense. By regenerative, a deep scarlet reddening, just short of blistering. By desquamative, a scarlet reddening that is accompanied by small blisters. In the table, the time and reactions given, for the applicator mentioned and with the Water Cooled Lamp operating at between 50-60 volts, are generally the ones obtained by test. From these values, the clinician may speedily calculate the time necessary to produce any required degree of erythema with any applicator, which is, for the above data:

Applicator	Factor	Stimulative	Erythema Regenerative	Desquamative
851	1	30	45	60
852	1	30	45	60
853	1	30	45	60
864	3	90	135	180
865	2	60	90	120
41	2	60	90	120
46	1	30	45	60
47	1	30	45	60
58	¾	22	34	45
59	2	60	90	120
61	2	60	90	120
62	1	30	45	60
67	3	90	135	180
95	2	60	90	120
96	2	60	90	120

Although the table just furnished will be that commonly found to obtain, each operator should repeat these tests with his own equipment, there being a "personal" factor that creeps into the values according to the individual's manner of holding the lamp while conducting the "treatments."

APPENDIX

Necessary Caution to be Taken in Administering Electrical Treatment

Before starting the treatment:

Carefully examine your machine settings.

If you do not get current, place your fingers to the taps on the machine to ascertain if trouble is in the cords or break in contact to patient.

The patient should always be free from the ground, damp stone floors or away from the proximity of radiators, pipes, etc.

In administering diathermy the electrodes should be free from sharp edges or points.

Perfect contact is necessary in the application of any electrical modality to patient.

The cords leading to patient should always be straight as it is possible to choke current with loops in the cords.

Always use the minimum setting at the start, advancing current slowly to the desired point of intensity.

Current Supply for Energizing Apparatus

The prevailing current throughout the United States is the 60 cycle alternating current of either 110 or 220 volts. In the central districts of some of the larger cities, however, the current available is usually a direct current of 110 and 220 volts.

Very often we find in rural districts which are supplied by power stations, an alternating current of 25 cycles.

In recent years the 60 cycle alternating current has prevailed in all new installations, and in those districts where the 25 cycle current exists the change from 25 cycle to 60 cycle alternating current is made when modern equipment is put in.

The 110 and 220 volt 60 cycle alternating currents and the 110 and 220 volt direct currents are very satisfactory for the operation of modern electro-therapeutic apparatus.

Where the physician desires a galvanic current for therapy and has only the alternating current available, it will be necessary for him to install a motor generating set, which will transform this alternating current into a direct current. This, of course, applies also to the slow galvanic sinusoidal current.

For the operation of a high frequency apparatus, alternating current is necessary. In those instances where only the direct current is available, a rotary converter will have to be installed, by means of which the direct current will be transformed into an alternating current.

Galvanic Current

The Galvanic current is an unidirectional one, having a positive and negative pole—these poles have opposite effects. The positive pole expels oxygen and is of acid reaction. It dehydrates tissue. The negative pole frees hydrogen and is of alkaline reaction. It is used most frequently as the active electrode in the treatment of any form of scar tissue, cicatrical contractures, etc.

One of the important principles to bear in mind in the practice of electro-therapeutics is the fact that the electric current always follows the path of least resistance. Diseased or scar tissues offer very little resistance, which will readily explain why electricity is indicated in many conditions.

Galvanic Sinusoidal Current

The galvanic sinusoidal current should not be confused with other alternating or interrupted currents. It is a rhythmic current in the true sense of the word, and in its ideal form, the rhythm is under control and so is adapted to the normal muscular impulses.

The slow galvanic sinusoidal current is, at its source, an unidirectional one, but by means of a revolving wire resistance drum the current is made to flow alternately in opposite directions. Thus we may also refer to it as a slow alternating current, as the poles are changing alternately. This current, to be used effectively, should represent a true sine wave when delivered from this gear driven resistance drum.

It might be well to compare the galvanic sinusoidal current with the ordinary commercial current of 60 cycles which, as we all know, has 3600 alternations (7200 impulses) per minute. In the slow or galvanic sinusoidal current we have a means of selecting between 5 to 35 (10 to 70 impulses) alternations per minute, depending upon the rhythm of the muscles to be treated.

In the application of the galvanic sinusoidal current the half cycle above the zero line gives the chemical stimulus of positive galvanism, while the half cycle below the zero line give the stimulus of negative galvanism, thus reversing the chemical action of the first half cycle.

In many cases of nerve degeneration a muscle will respond to slow galvanic sinusoidal current but not to an interrupted galvanic current.

The dosage of galvanic current depends largely on the sensory of the patient, and the size of the electrodes applied, the object being to get normal muscular contractions.

Rapid Sinusoidal Current

This is a very rapid alternating current ranging from 3600 alternations per minute and up. It is rapidly replacing the faradic current in electro-therapeutics, it being much smoother, less painful and of deeper effect. There are many conditions where it is used to relieve pain.

Surging Sinusoidal Current

This is a rapid alternating current run over a rheostat which automatically surges the amount of current flowing from zero to maximum dosage, then down again to zero. For the ideal surging sinusoidal current, it is necessary that this automatic revolving resistance drum permit no break in the current at the zero point, and that the surges of the current be gradual in both rise and fall.

This current has many uses and may be applied in those instances where the patient's skin is supersensitive and can not bear the galvanic type of current. It is used for prostatic massage and other cavity treatments.

High Frequency Current

The high frequency current as used in medicine is of high periodicity, i. e., alternations. In modern apparatus this frequency varies from 25,000 to a million per second. Consequently, the application of high frequency current does not result in muscular contractions.

The four most common forms of high frequency current as used in medicine are:

1. Auto-condensation or saturation.
2. Diathermy.
3. Fulguration or electro-coagulation.
4. Vacuum and non-vacuum electrode treatments.

Auto Condensation

For auto condensation or saturation the Tesla form of high frequency current is usually selected, it having high voltage and low milliampereage. The amount of current used ranges between 300 and 850 milliamperes as indicated by the hot wire meter. The voltage of the modern Tesla coil ranges from 300 volts to 30,000 volts, depending upon the machine. One point on the current controller sometimes causes a change of 10,000 in voltage. The dosage of this current generally ranges from 300 to 850 milliamperes over a period of from 8 to 15 minutes.

Diathermy

Diathermy is a form of treatment with the high frequency current, the object being to pass the heat through that part of the body to be treated, by means of placing the metal electrodes opposite each other in the affected area. The D'Arsonval form of high frequency current is used exclusively for this purpose in that it is comparatively high in milliampereage and low in voltage.

The dosage in diathermy treatment varies from 200 to 1500 milliamperes, depending upon the area of the part to be treated.

Fulguration

This is a form of cauterization by means of the high frequency current. The advantage of using fulguration over the ordinary cautery method is that it enables the operator to localize without applying pressure and minimizes the amount of scar tissue.

Electro Coagulation

Here, too, the D'Arsonval form of high frequency current is used for removing large growths. In this method a large indifferent electrode is placed over the abdomen or back, then concentrating the current to a selected area, depending upon the size of the growth or tumor.

Vacuum or Non-Vacuum Electrode Treatment

This treatment is obtained by passing the high frequency current through a glass vacuum electrode. This electrode is used principally for surface treatments. Most physicians are unwilling to risk it for cavity treatments for fear of collapse of the electrode. The non-vacuum electrode is, therefore, selected for cavity treatments.

Non-Vacuum Electrode

As its name implies this electrode differs from the vacuum electrode in that it is not pumped to a vacuum. It is made of glass and has a heavy sterling silver deposit on its inner surface to serve as the conductor. It is possible to use this electrode on the diathermy circuit, using an indifferent electrode with it. The glass of the non-vacuum electrode being dielectric in effect, gives what might be termed a cavity auto condensation. That is to say, a localization of heat is very much desired in these cases.

The non-vacuum electrode is very popular in that it is impossible for it to become broken through the action of the electric current.

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